

VOL. IX

QUARTERLY

No. 3

FEB 26 1940

MEDICAL LIBRARY
HISTORICAL BUILDING
DES MOINES, IOWA

The
Australian
and
New Zealand
Journal of Surgery



JANUARY 1940

BUTTERWORTH & CO. (AUSTRALIA) LTD.

(Incorporated in England)

SYDNEY

MELBOURNE

WELLINGTON

LONDON

Registered at the General Post Office, Melbourne, for transmission by post as a periodical.



From Michelangelo

***Brief Hypnotic* • PROFOUND SEDATIVE EFFECT**

FROM ONE-HALF THE DOSAGE REQUIRED WITH MOST BARBITURATES

Administered orally, rectally, or, in emergencies, intravenously, Nembutal exerts an extremely rapid but brief hypnotic and a pronounced sedative action from a dosage only about one-half that required with most other powerful barbiturates. This small dosage also reduces the recovery period by about one-half and, by lessening the amount of the drug to be eliminated, makes Nembutal, clinically, one of the safest of the barbiturates.

● Safety, rapidity and brevity of action recommend Nembutal for use not only as a pre-anæsthetic sedative in major and minor surgery, but also in the treatment of insomnia, hysteria, seasickness, nausea from any cause, eclampsia, delirium tremens, convul-

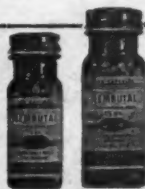
sions from strychnine or other poisoning and in obstetrics—with or without morphine and scopolamine. Nembutal has also been used with much success as a supplement to morphine in controlling the pain of early cancer.

● Nembutal is available through pharmacies in a wide variety of forms, the most widely employed of which are the $\frac{1}{4}$ -grain and $1\frac{1}{4}$ -grain capsules for oral use. Literature will be sent promptly upon request.

NEMBUTAL

BRAND

SEDATIVE • HYPNOTIC • ANTISPASMODIC



**ABBOTT LABORATORIES
LIMITED**

Box 3698 SS, G.P.O. • Sydney, N.S.W.

THE AUSTRALIAN AND NEW ZEALAND JOURNAL OF SURGERY

UNDER THE DIRECTION OF THE EDITORIAL COMMITTEE
OF THE ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

SIR HUGH DEVINE, Chairman.

E. D. AHERN (Q.)
ARCHIE J. ASPINALL (N.S.W.)
SIR L. BARNETT (N.Z.)
F. G. BELL (N.Z.)
(Editorial Secretary in New Zealand)
A. E. BROWN (Vic.)
C. E. CORLETTE (N.S.W.)
PROFESSOR H. R. DEW (N.S.W.)
SIR THOMAS DUNHILL (Eng.)
SIR JAMES ELLIOTT (N.Z.)
P. S. FOSTER (N.Z.)
F. A. HADLEY (W.A.)
T. E. VICTOR HURLEY (Vic.)
E. S. J. KING (Vic.)

L. C. E. LINDON (S.A.)
FAY MACLURE (Vic.)
F. A. MAGUIRE (N.S.W.)
SIR HENRY NEWLAND (S.A.)
SIR ALAN NEWTON (Vic.)
H. R. G. POATE (N.S.W.)
BALCOMBE QUICK (Vic.)
SIR CARRICK ROBERTSON (N.Z.)
F. P. SANDES (N.S.W.)
JULIAN SMITH, Junr. (Vic.)
PROFESSOR J. C. WINDEYER (N.S.W.)
D. S. WYLIE (N.Z.)
B. T. ZWAR (Vic.)

MERVYN ARCHDALL, Editor.

I. DOUGLAS MILLER, Secretary to the Editorial Committee.

JANUARY, 1940

ISSUED QUARTERLY

Single Numbers, 7s. 6d.

Annual Subscription, £1 10s.

SYDNEY
BUTTERWORTH & CO. (AUSTRALIA) LTD.

(Incorporated in England)

8 O'Connell Street

Melbourne, Vic.: Henty House, Little
Collins Street.

Wellington, N.Z.: 49-51 Ballance Street.

Auckland, N.Z.: 35 High Street.

London: Butterworth & Co. (Publishers)
Ltd., Bell Yard, Temple Bar.

Calcutta

Madras

Bombay

} Butterworth & Co. (India) Ltd.

Toronto: Butterworth & Co. (Canada) Ltd.

Durban: Butterworth & Co. (Africa) Ltd.



JOHN WEISS & SON, LTD.

287 OXFORD STREET, LONDON, W.1

Telegraphic Address:
Lithotrite, phone, London

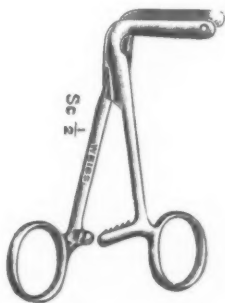
ESTABLISHED 1787

Telephone:
Mayfair 8343 (2 lines)

CLEFT PALATE AND HARELIP INSTRUMENTS



Cleft Palate Needleholder, improved model, Denis Browne's.



Harelip Forceps, angled on flat, box joint,
Children's Hospital pattern.



Tension Bridge, Denis Browne's.



FULL SIZE
Harelip Knife, chisel edge, Denis Browne's.

NATURAL BILE MEDICATION

BILE administered by mouth is an effective cholagogue and choloretic. It promotes emptying of the gall-bladder and appears to stimulate the secretion of bile by the liver. For these effects it is commonly used as an adjuvant to the treatment of chronic gall-bladder disease, hepatic insufficiency and migraine. It is sometimes of service as part of the treatment of anorexia, intestinal indigestion and constipation, and bacteriostatic action inhibits putrefactive changes in the intestines. Other therapeutic uses for bile include the treatment of steatorrhœa, in which condition it promotes the absorption of fatty acids and fat-soluble vitamins from the intestine.

Postoperative management is particularly important in patients with obstruction of the common duct. Extra-hepatic functions of the bile play an important part in body economy, and restoration of normal intestinal function will follow feed-

ing of Desicol to patients whose bile is being lost.

The majority of patients who suffer from pain and dyspepsia after cholecystectomy can be relieved by a fat-free diet and adequate intake of bile salts.—Dubilet, et. al., *Am. J. Digest. Dis.*, 5: 348, 1938.

Desiccated bile in a form which is readily soluble, and similar to whole fresh bile in therapeutic activity, is supplied in Desicol Capsules, each of which is equivalent to approximately 2.5 c.c. of fresh whole gall-bladder bile or 25 c.c. of liver bile. Desicol Capsules are supplied in bottles of 50.

Full details, together with suggestions for dosage, will be furnished on request.

PARKE, DAVIS & Co.

THE U.S.A. LIABILITY LTD.

G.P.O. BOX 4198 XX, SYDNEY

A. C. M. I.

AMERICAN CYSTOSCOPE MAKERS INC.

Brown-Buerger Cystoscopes.

McCarthy Foroblique Pan-Endoscope.

Infant Cystoscopes.

Urethroscopes, Thorascopes.

Prostatic Resection Instruments.

Catheters, Drains, Bougies and Accessories,

Ameran Latex, Ameran Black (Anode Process).

Cystoscopic Accessories.

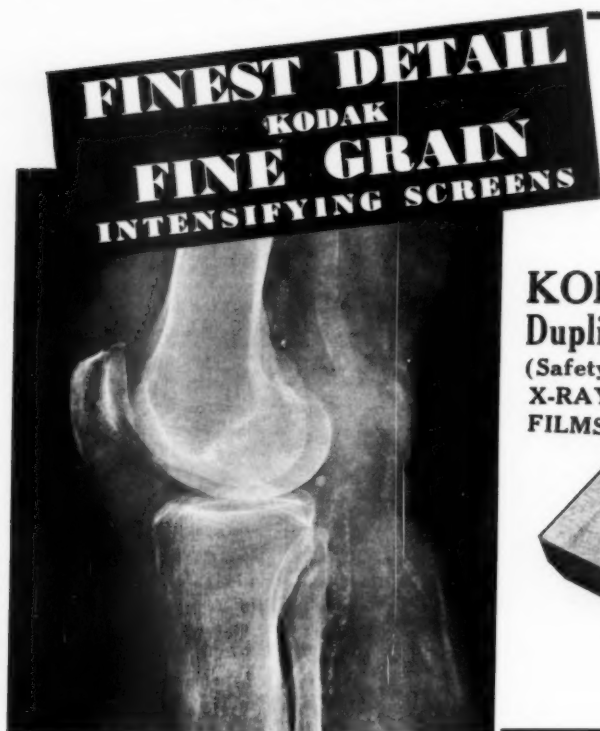
SOLE AGENTS:

**WATSON VICTOR
LIMITED**

SYDNEY: WATSON HOUSE, BLIGH STREET. MELBOURNE: 117 COLLINS STREET

BRISBANE, ADELAIDE, PERTH, NEWCASTLE

WELLINGTON, N.Z.: 16 THE TERRACE. AUCKLAND, CHRISTCHURCH, N.Z.



Finest detail . . . through Kodak Fine Grain Intensifying Screens.

Brilliant contrast . . . through Kodak Ultra-Speed Intensifying Screens.

Kodak Dupli-sized X-Ray Films . . . balanced to ensure superior radiographs of each and every area, producing images with just those qualities that never fail to facilitate interpretation.

KODAK
Dupli-sized
(Safety Blue)
X-RAY
FILMS



KODAK
(A/sia)
PTY. LTD.

All States, and
New Zealand.

The British Encyclopaedia of Medical Practice

Under the General Editorship of

SIR HUMPHRY ROLLESTON

BT., G.C.V.O., K.C.B., M.D., D.Sc., D.C.L., LL.D.,

Emeritus Regius Professor of Physic, Cambridge; Sometime President of the
Royal College of Physicians of London,

And Associate Editors and Authors for each title.

THE NEW 24-PAGE BROCHURE IN COLOUR,
containing full details, will gladly be sent post free on request to

BUTTERWORTH & CO. (AUSTRALIA) LTD.

6-8 O'CONNELL STREET, SYDNEY, N.S.W.

P.O. BOX 1510 DD

Also at Melbourne, Wellington and Auckland.

G.F. MERSON LTD.

SPECIALIST MANUFACTURERS OF SURGICAL SUTURES

STERILE SURGICAL
CATGUT PREPARED BY
PROCESS APPROVED
BY H.M. DEPARTMENT
OF HEALTH FOR
SCOTLAND AND
CERTIFIED STERILE.



ACCURATE GAUGE.
FLEXIBILITY.
STRENGTH.
STERILITY.
COMPLETE
RELIABILITY.

Five feet lengths, STERILE, in hermetically sealed tubes. Many other convenient packs available.
OVER TWENTY YEARS EXPERIENCE IS MOST CORDIALLY AT YOUR SERVICE.

G. F. MERSON LTD.
EDINBURGH, SCOTLAND

Supplies may be obtained from the following, who are Sole Agents for Merson's products in their respective territories and carry adequate stocks:

AUSTRALIA

Drug Houses of Australia Ltd., Incorporating:

WESTERN AUSTRALIA	-	-	-	Felton, Grimwade & Bickford Ltd., PERTH
SOUTH AUSTRALIA	-	-	-	A. M. Bickford & Sons Ltd., ADELAIDE
VICTORIA	-	-	-	Felton, Grimwade & Duerdins Ltd., MELBOURNE
NEW SOUTH WALES	-	-	-	Elliotts & Australian Drug Ltd., SYDNEY
QUEENSLAND	-	-	-	T. & E. (Surgical) Ltd., BRISBANE

NEW ZEALAND

{ Dental & Medical Supply Co., Ltd.
AUCKLAND — CHRISTCHURCH — DUNEDIN
WELLINGTON (Head Office).

FINE DIAMONDS



Diamond Brooch, £250.



Diamond Brooch, £150.



Diamonds,
£50.



Diamond Brooch,
£175.



Diamonds,
£45.



Diamonds,
£22/10/-.



Calibre Cut,
Diamonds,
£40.



Diamonds,
£40.



Diamonds,
£50.



Diamonds,
£10.



Diamonds,
£15.



Diamond Clip,
£35.



Diamond Bow
Brooch, £15.



Diamond Bow Brooch,
£50.



Diamond Clip,
£50.

Wm. DRUMMOND & Co.
JEWELLERS

344-346 COLLINS STREET, MELBOURNE, C.1

Wm. Drummond & Co. are celebrating this year the Eighty-third Anniversary of their Establishment in business in Collins Street.

F. V. Richards & Co.

47 Castlereagh St., Sydney

GENTS & LADIES TAILORS & OUTFITTERS. ESTABLISHED 1899

SAC SUITS & COSTUMES TAILORED TO ORDER

SEVEN TO FIFTEEN GUINEAS

SHIRTS TO MEASURE

FROM TWENTY ONE SHILLINGS

Monthly Accounts available to approved clients.



British Medical Agency of New South Wales Ltd.

B.M.A. HOUSE, 135-137 MACQUARIE STREET, SYDNEY.

The Official Agency of the B.M.A. (N.S.W. Branch).

Our Services include: Supplying of Reliable Locum Tenens, Assistants, etc.;
Valuation, Sale, and Purchase of Medical Practices, Partnerships, etc.;
Advice on Life and Endowment Assurances; Agents A.M.P. Society.

Trustees, B.M.A. (N.S.W. Branch) Superannuation Sickness and Accident Fund.
(Open to members or potential members of the Branch.)

All Fire and Accident Insurances Effected.

Bookkeeping and Accounts Service. Duplicating and Copying Service.

FREE ADVICE

in strict confidence, on all matters connected with the business side of medical practice.

**FINANCIAL ASSISTANCE FOR THE PURCHASE OF PRACTICES IS AVAILABLE
IN APPROVED CASES.**

Consult Us For All Medical Agency Work.

Write, Telephone, or Call on

E. J. L. DAVIES, Secretary. 'Phone: B 4159. After Business Hours: JA 5412. Telegraphic Address: Locumtens, Sydney.

Seppelt's



CHATEAU TANUNDA BRANDY

*Since '89
from Pure Grape Wine*

The quality of the grapes produced at the famous Chateau Tanunda Vineyard is second to none in the world. Chateau Tanunda Brandy is distilled from the purest wines made from these luscious grapes, and it retains the valuable ethers which go to make its medicinal properties. Its distillation is carried out under Government supervision. Chateau Tanunda Brandy is supplied to most Hospitals and Government Institutions throughout Australasia.

Proprietors:

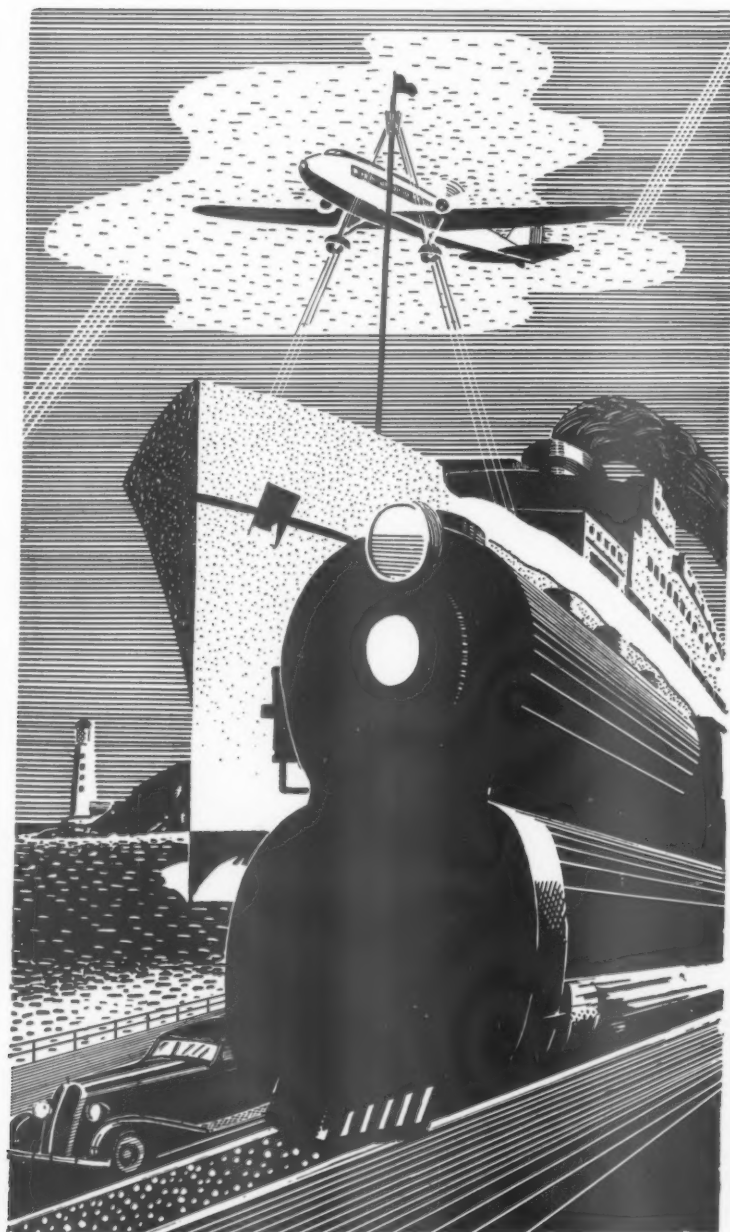
B. SEPPELT & SONS LTD.

Head Office at

SEPPELTSFELD, SOUTH AUSTRALIA

Branches at Sydney, Melbourne, Adelaide,
Brisbane, Fremantle and Broken Hill

ON ARRIVAL IN MELBOURNE SAY **MENZIES**



TO YOUR
TAXI-DRIVER



And then you'll be sure of unrivalled service, perfect cuisine, a restful atmosphere and a pervading sense of comfort. Over a hundred rooms, centrally heated and each with its own bathroom, have just been newly furnished and fitted in the most modern manner.

Room and breakfast (from 16/- a day), or inclusive tariff. Menu, table d'hôte or à la carte.

TELEGRAPHIC ADDRESS — MENZOTEL — MELBOURNE

27th YEAR. The ONLY BRITISH SURGICAL JOURNAL. Established 1913.

Subscription Price, 42/- net per annum, post free. Single Numbers, 12/6 net. Bound Volumes 49/6 net each. Issued Quarterly in July, October, January and April. Volumes commence in July, but subscriptions may start at any time. Title and Index with April number. Cases for binding, 4/- net; or each Volume bound complete for 7/6 net, post free, on receipt of the four numbers.

The British Journal of Surgery

UNDER THE DIRECTION OF THE FOLLOWING EDITORIAL COMMITTEE:

*GEORGE E. GASK (London), *Chairman*

F. J. ANDERSON (Calcutta)
EDWARD ARCHIBALD (Montreal)
Sir C. ARTHUR BALL, Bart. (Dublin)
SEYMOUR BARLING (Birmingham)
*J. BEATTIE (London)
GORDON BELL (Dunedin)
P. B. BHARUCHA (Lahore)
WILLIAM H. BOWEN (Cambridge)
I. W. BREBNER (Johannesburg)
RUSSELL C. BROCK (London)
HUGH CAIRNS (Oxford)
C. ROCK CARLING (London)
M. M. CRUICKSHANK (Madras)
P. T. CRYMBLE (Belfast)
HAROLD R. DEW (Sydney)
ERNEST FINCH (Sheffield)
E. R. FLINT (Leeds)
C. H. S. FRANKAU (London)
Sir JOHN FRASER (Edinburgh)
W. B. GABRIEL (London)
E. PEARCE GOULD (London)
GEOFFREY HADFIELD (London)
GEOFFREY JEFFERSON (Manchester)
T. P. KILNER (London)
J. R. LEARMONTH (Aberdeen)
L. C. E. LINDON (Adelaide)

WING-COMMANDER P. C. LIVINGSTON (Royal Air Force Medical Branch)
ADAMS A. McCONNELL (Dublin)
*E. K. MARTIN (London)
B. C. MAYBURY (London)
PHILIP MITCHNER (London)
Sir ALAN NEWTON (Melbourne)
W. H. OGILVIE (London)
CHARLES A. PANNETT (London)
MILROY PAUL (Colombo)
R. S. PILCHER (London)
HARRY PLATT (Manchester)
*Sir D'ARCY POWER (London)
F. C. PYBUS (Newcastle-on-Tyne)
LAMBERT ROGERS (Cardiff)
*J. PATERSON ROSS (London)
CHAS. F. M. SAINT (Cape Town)
J. J. M. SHAW (Edinburgh)
SURGEON REAR-ADMIRAL H. E. R. STEPHENS (Naval Medical Service)
*G. GREY TURNER (London)
*CECIL P. G. WAKELEY (London)
Sir JAMES WALTON (London)
R. OGIER WARD (London)
COL. J. M. WEDDELL (Army Medical Service)
Sir W. I. DE COURCY WHEELER (London)
DAVID STORER WYLIE (Palmerston North, N.Z.)

*E. W. HEY GROVES (Bristol), *Editorial Secretary*

*Constitute the Executive Committee.

Each volume contains about 800 pages, lavishly illustrated. The contents are made up of Original Papers, Descriptive Accounts of Contemporary Surgery in other Countries, Articles on Surgical Technique, Experimental Surgery, Short Notes of Rare or Obscure Cases, and Critical Reviews of Surgical Books, etc.

"Remarkable for the excellence of its illustrations."—BRITISH MEDICAL JOURNAL.

"Need fear comparison with none. We would impress upon all surgeons the need to subscribe to this Journal."—LANCET.

A GENERAL INDEX OF THE FIRST 10 VOLUMES OF THE JOURNAL (1913-1923) has been prepared, uniform in size with the page of the Journal. Cloth, gilt lettered. Price 5/- net.

ALSO: GENERAL INDEX, VOLUME 2 (Ten Volumes, 1923 to 1933). Price 10/6 net.

ATLAS OF PATHOLOGICAL ANATOMY, under the Editorship of E. K. Martin, M.S., F.R.C.S., of University College Hospital, London, describes some of the most instructive and historical specimens in the Hunterian Museum of the Royal College of Surgeons and in other Museums. The descriptions are illustrated both in colour and black-and-white, and with X-ray pictures and drawings of microscopical sections.

Vol. I contains Fasciculus I. TUMOURS OF BONE; II. DISEASES OF THE STOMACH; III. DISEASES OF THE BREAST; IV. DISEASES OF THE KIDNEY; V. DISEASES OF THE GALL-BLADDER AND BILE-DUCTS; INFLAMMATION OF BONE. Vol. II contains Fasciculus VI. DISEASES OF THE JOINTS; DISEASES OF THE THYROID GLAND; VII. DISEASES OF THE THYROID GLAND; DISEASES OF THE MOUTH, PHARYNX AND OESOPHAGUS; VIII. DISEASES OF THE ALIMENTARY CANAL; IX. DISEASES OF THE GENITO-URINARY SYSTEM AND OF THE APPENDIX; X. GANGRENE; FIBROCYSTIC DISEASE OF BONE; MISCELLANEOUS.

BOUND IN CLOTH, with Index and Title, price 75s. net each volume.

Any Fasciculus supplied bound in stout paper covers at 21/- net, or 15/- net to Journal subscribers.

JOHN WRIGHT & SONS LTD., Publishers, BRISTOL, ENGLAND

LEWIS'S BOOKS

VOLUME I.	Pp. xii + 590.	With 398 Illustrations.	Crown 4to.	50s. net (in Great Britain), reduced post., 1s. 1d.
VOLUME II.	Pp. xii + 456.	With 307 Illustrations.	Crown 4to.	42s. net (in Great Britain), reduced post., 1s.
VOLUME III.	Pp. xiv + 800.	With 710 Illustrations.	Crown 4to.	63s. net (in Great Britain), reduced post., 1s. 8d. JUST PUBLISHED.

A TEXT-BOOK OF X-RAY DIAGNOSIS

BY BRITISH AUTHORS

Edited by S. COCHRANE SHANKS, M.D., M.R.C.P., PETER KERLEY, M.D., M.R.C.P., D.M.R.E.,
and E. W. TWINING, M.R.C.S., M.R.C.P., D.M.R.E.

"This excellent text-book will be welcomed . . . there can be no reason to await completion before prophesying its early recognition as a classic."—*Lancet*.

With 463 Illustrations (some Coloured).

Pp. xii + 552. 9 $\frac{3}{4}$ × 6 $\frac{1}{2}$ inches.

42s. net (in Great Britain); reduced postage abroad, 1s.

ROYAL NORTHERN OPERATIVE SURGERY

By the SURGICAL STAFF OF THE ROYAL NORTHERN HOSPITAL, LONDON.

Edited by Sir Lancelot Barrington-Ward, K.C.V.O., F.R.C.S.

CONTRIBUTORS:

Sir Lancelot Barrington-Ward, F. D. Saner, Kenneth Walker, W. B. Gabriel, R. J. McNeill Love, Hamilton Bailey, Eric Lloyd, C. S. Lane-Roberts, Norman White, J. B. Hunter, M. F. Nicholls.

"... It is the best text-book of operative surgery which has been published within recent years."
—*British Medical Journal*.

Prospectus, containing Contents, Illustrated Specimen Pages and Order Form, post free on request.

LONDON: H. K. LEWIS & Co. Ltd., 136 GOWER STREET, W.C.1

Every standard accepted operation described and illustrated

MODERN SURGICAL TECHNIC has been deliberately designed to be but one thing—the most complete, most thorough, most up-to-date, and most authoritative work on surgical technique ever published.

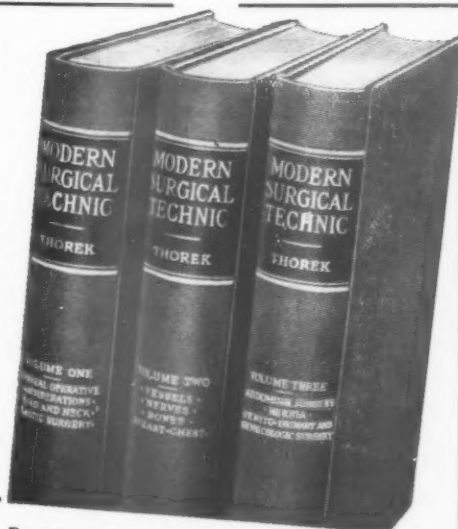
By a method of presentation following the principle that "one picture is worth a thousand words", the technique of all operations in accepted use to-day, from the simplest to the most complicated, is described and illustrated step by step.

With 2174 illustrations (more than one to a page), mostly drawn by W. C. Shepard, one of the world's greatest medical artists, the work is a veritable picture-encyclopædia, clearly and concisely interpreting the operative methods of practically every living authority on any part of the body.

Write for full particulars. If you wish, a set of the books will be sent to you on approval.

ANGUS & ROBERTSON LTD.

89 Castlereagh Street, Sydney



● By Max Thorek, M.D., K.L.H. (France), K.C. (Italy). 3 volumes, each completely indexed. 1,800 pages. Cash price £9/9/., or purchasable in 10 monthly payments of 21/-.

The Pineal Organ

by **R. J. GLADSTONE**, M.D., F.R.C.S., F.R.S.E., D.P.H.

Formerly Reader in Embryology and Lecturer in Anatomy, King's College, University of London, and Lecturer in Embryology at the Medical College, Middlesex Hospital, London.

and **CECIL P. G. WAKELEY**, D.Sc., F.R.C.S., F.R.S.E., F.Z.S., F.R.A.C.S.

Fellow of King's College, London, and Lecturer in Applied Anatomy at King's College, University of London; Senior Surgeon, King's College Hospital and the West End Hospital for Nervous Diseases; Consulting Surgeon to the Royal Navy.

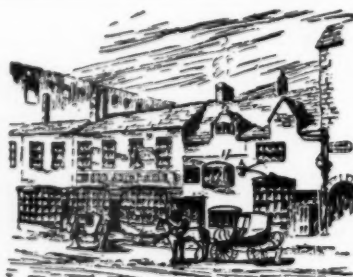
Pp. xvi + 528, 323 Illustrations.

Price 42s. Postage 1s. 10d.

With a foreword by **SIR ARTHUR KEITH**, F.R.S.

This work, written in collaboration by an anatomist of eminence and a surgeon in the forefront of his profession, deals with this question of man's invertebrate ancestry not only from the geological record, but from the literature of comparative anatomy and from the wide and varied experience of the authors.

BAILLIÈRE, TINDALL AND COX
7 and 8 Henrietta Street, London, W. C. 2



The Original Optical House of Wood,
Liverpool, Eng.

ESTABLISHED 1817

Optical Prescriptions
accurately dispensed under
personal supervision

W. PERCY WOOD, F.I.O.O.

W. LAYTON WOOD, F.V.O.A.

A. LAYTON WOOD, F.V.O.A.

'Phone MU 4318. Open till 9 p.m.

WOOD

REGISTERED OPTICIANS

E. Wood & Co. Pty. Ltd.

95 Elizabeth Street, MELBOURNE

David J. Farrell Medical Draughtsman and Illustrator

*All branches of Medical Art accurately
delineated.*

GROSS ANATOMY
MICROSCOPIC ANATOMY
MORBID ANATOMY
HISTOLOGICAL PATHOLOGY
SURGICAL PROCEDURE

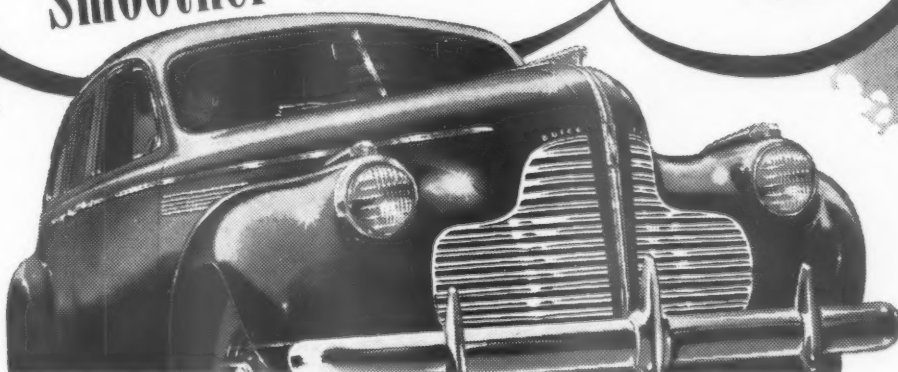
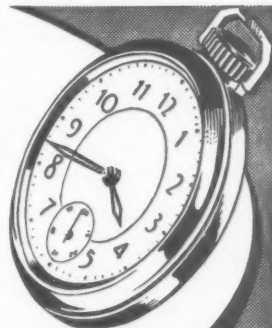
(a) Operation Fields
(b) Cystoscopic Technique

and all Clinical illustration.

Communication:
Anatomy Department, Sydney
University.

'Phone: MW 2541.

NOW! . . . "Micropoising"
makes **Buick** engine
Smoother than a Watch!



"MICROPOISED"

Buick has developed this special process enabling vibration to be almost entirely overcome. Each Dynaflex engine when finished is mounted on a steel bed. A special machine picks up every hint of vibration, tells how much vibration there is, and where the off-balance is. That off-balance is corrected on each individual engine and by this method Buick is now able to hold all engines within an $\frac{1}{16}$ th of an inch-ounce—a limit eight to sixteen times closer to sheer perfection.



From the velvet velocity of its Micropoised Straight Eight Dynaflex Engine to the superb styling of its sleek, stream-lined body, Buick for 1940 is simply full of new-day features.

Refined BuiCoil Springing . . . deeper, stronger chassis . . . dazzling new front end . . . new safety location headlamps . . . new guards . . . distinctive upholstery treatments . . . and delightful interior details, are only some of the improvements that make Buick for 1940 even more worthy of your pride of ownership.

Come in, see and admire this breath-taking beauty — and then drive it! You won't drive Buick a mile before you realise that you've got hold of something that tops anything you've ever handled . . . yes, even previous Buicks.

BUICK for 1940

Buy from your local Buick Dealer

Sold and Serviced by Buick Dealers throughout Australia.

GENERAL MOTORS-HOLDEN'S LTD.

JACKSON & SPRING PTY. LTD.

•
**Customs, Transport and
Shipping Agents**

Cartage Contractors

Insurance Brokers

Storers

•

495 Adelaide Street, Brisbane, Queensland

'Phone: B 1978 (2 lines).

8-12 Bathurst Street, Sydney, N. S. W.

'Phone: M 6504 (11 lines).

487-91 Flinders Street, Melbourne, Victoria

'Phone: MU 6444 (4 lines).

23 Hyde Street, Adelaide, South Australia

'Phone: Central 4194 (2 lines).

8 Todd Street, Port Adelaide, South Australia

'Phone: J 1706.

NOVOCAIN

BRAND ETHOCAIN
HYDROCHLORIDE
The Original Preparation
English Trade Mark, No. 276477 (1905).

**The Safest and most Reliable Local
Anæsthetic for all Surgical Cases**

The Oldest and Still the Best



COCAINE FREE LOCAL ANÆSTHETIC

Does not come under the restrictions of the Dangerous Drugs Act

WRITE FOR LITERATURE

SOLD UNDER AGREEMENT

THE SACCHARIN CORPORATION, LIMITED

72 Oxford Street - - - - - London, W.1

Telegrams: SACARINO, RATH, LONDON.

Telephone: MUSEUM 8096.

Australian Agents:

J. L. BROWN & CO., 271 Moreland Road, Moreland, N.13, Melbourne.

Johnson & Johnson
**RED CHAIN
 COTTON**

**SUPER PROFESSIONAL QUALITY
 AND REGULAR QUALITY**

JOHNSON'S Red Chain Cotton is made only of virgin, long-fibre cotton. It is the finest, most absorbent grade of surgical cotton, with exceptional whiteness and strength and meeting the highest standards of quality and absorbency.

It is available in Super Professional Quality and Regular Quality, and when you unseal a package of either, you open a fresh supply of *sterile* cotton ready for the most exacting requirements.

Johnson & Johnson

WORLD'S LARGEST MANUFACTURERS OF
 SURGICAL DRESSINGS

**The
 Sydney Sanitarium
 and Hospital**

Established in the year 1902 for the purpose of providing a place where the use of natural remedies and proper dietary would assist in the recovery of health.

**Consumptive and Mental Cases Not
 Admitted.**



**The Sydney Sanitarium and Hospital,
 Wahroonga, N.S.W.**

TREATMENT.

Massage,
 Hydrotherapy, Russian
 and Vichy Baths,
 Hydro-Electric Baths,
 Electric Light Baths,
 Diathermy, Ultra
 Short Wave Diathermy.

EQUIPMENT.

Modern Operating
 Theatre, Nitrous-
 Oxide Anaesthesia
 Apparatus, Well-
 equipped Laboratory,
 McKesson Metabolor,
 and X Ray.

**A Modern Private Hospital
 receiving Medical, Surgical
 and Obstetrical Cases**

Illustrated booklet and terms on application
 to the Manager.



FOR ANTISEPSIS---

MELASOL has won for itself very favourable comment from the Medical, Dental and Nursing Professions, and has been proved an efficacious germicide antiseptic for general practice. MELASOL is compounded from TI-TROL Oil, which is shown by the Rideal-Walker test as being from eleven to thirteen times stronger than carbolic, with the added advantage that it is **NON-IRRITANT** and will not burn or sting, even in open wounds. This fact, plus its efficacy, suggests MELASOL for use in hospitals, surgeries and the sick-room.

FOR PERIONYCHIA, ETC.

MELASOL has proved unequalled in the treatment of stubborn perionychia, and particularly satisfactory as a mouth-wash, gargle and for the dressing of wounds, cuts, sores, skin eruptions and pus formations. MELASOL is soothing and helps quickly to relieve pain and allay inflammatory conditions.

In maternity work MELASOL has successfully stood up to tests by the Honorary Pathologist of two Sydney Hospitals, who found that 2½% MELASOL kills hæmolytic streptococcus in 30

seconds. Tests at St. Bartholomew's Hospital, London, showed that MELASOL diluted to 1:3,200 inhibited the growth of the same organism.

In using MELASOL you get all the germicidal and antiseptic virtues of TI-TROL oil in standardised water-soluble form pathologically and analytically tested—indicating the safety and efficacy of MELASOL for use in general practice.

• MELASOL •

NON-POISONOUS

ANTISEPTIC

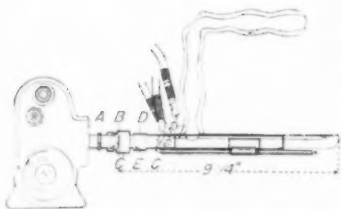
NON-IRRITANT

Used in 34 Hospitals in New South Wales

Manufactured by

AUSTRALIAN ESSENTIAL OILS LTD.
LOFTUS STREET SYDNEY

New Developments in Surgical Equipment.

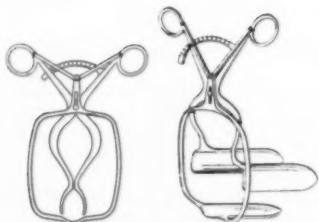
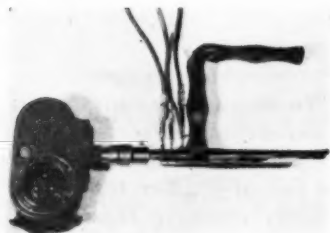


SIMPLIFIED APPARATUS FOR LARYNGEAL CINEMATOGRAPHY.

(*Archives of Otolaryngology*, Volume XXX, Number 3, September, 1939, page 438.)

Above: Schematic drawing of the apparatus.

Below: Photograph of the complete assembly ready for use.



SELF-HOLDING SURGICAL HOOK FOR BLADDER OPERATIONS.

(*Der Chirurg*, Volume XI, Number 6, March 15, 1939, page 216.)

The self-holding surgical hook is designed to be of practical aid when the surgeon is obliged to perform certain operations without the aid of an appropriate number of assistants. It consists of three scoops, one is fixed into a steel ring, the two others at the ends of levers, which are movably attached to the steel ring.



A SIMPLE LEG ELEVATOR FOR INCORPORATION IN A PLASTER CAST.

(*The Journal of Bone and Joint Surgery*, Volume XXI, Number 4, October, 1939, page 1045.)

The elevator consists of two pieces of wood about twelve inches long by one inch wide and one inch deep, fastened together so as to form a cross. It is described by Sidney Sideman, M.D., Chicago, Illinois.

These instruments are selected by the Editorial Committee, and the Publishers will be glad, whenever possible, to give the names of the suppliers to any subscriber.

Coramine

'Ciba'



**RESPIRATORY
and
CIRCULATORY
STIMULANT**

Well tolerated -
orally,
subcutaneously
and
intravenously

Very wide margin
of SAFETY

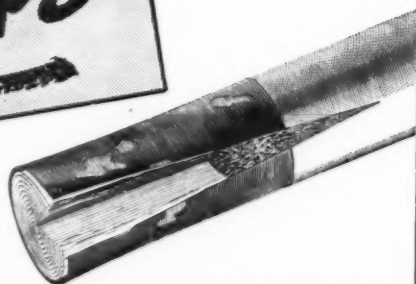
Literature sent on request by

J. M. HARKNESS, Ph.Ch., G.P.O. Box 271 DD, Sydney, Australia.

SOCIETY of CHEMICAL INDUSTRY IN BASLE (SWITZERLAND)



*"The smoke comes clean
with **GARRICK
FILTER TIPS**"*



The purest form in
which tobacco can be smoked

★ A sectional view of the patented
scientific Garrick Filter Tip.

10 for 9d., 20 for 1/6 . . . also handy pocket flat 50's and round airtight 50's

361B-10-9

Safeguards the Surgeon

Samples from every batch of sutures tested by
a Bacteriological Institute



Recognising the great importance and desirability of a *definitely sterile suture*, embracing the other assets so necessary to the surgeon, the manufacturer, in conjunction with Bacteriological Authorities of the highest standing, conducted exhaustive research work and tests over many years before this product was finally conceived and perfected.

Hermetically sealed in an aseptic solution.

Obtainable all Surgical Houses

OR DIRECT FROM

W. RAMSAY (Surgical) PTY. LTD., 340 Swanston Street, Melbourne

DOCTORS!

Everything that is written, can be TYPE-WRITTEN quicker, better and easier on an

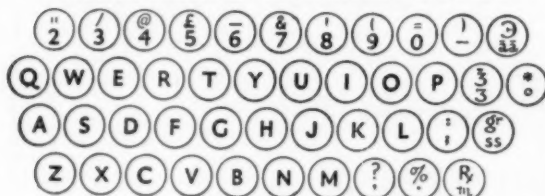
ENGLISH MADE

Imperial

Good Companion

PORTABLE

SPECIAL MEDICAL CHARACTER KEYBOARD



Every desirable modern feature is incorporated in this compact, sturdy machine—it's smart, smooth but speedy, with a full size 4 band SS character special medical keyboard. For quick, dignified work, for professional use, an Imperial Good Companion fulfils every possible requirement.

Have your secretary or nurse send for illustrated literature to the nearest distributor.

DISTRIBUTED IN AUSTRALIA BY

Dobell Pty. Ltd., 107 Pitt Street, Sydney.

L. Dobell & Co. Pty. Ltd., Creek Street, Brisbane.

Johnson & Hey, Newcastle and Northern Districts

Agents, 37 Hunter Street, Newcastle.

New Zealand Agents: Armstrong & Springhall Ltd., Wellington, Auckland, Christchurch, Dunedin, Wanganui.

Geo. Raitt & Co. Ltd., 40 Queen Street, Melbourne.

Holdsworth & Coy. Ltd., 51 Grenfell Street, Adelaide.

J. C. McPhee Pty. Ltd., 99 Collins Street, Hobart.

Burridge & Warren Ltd., 69 King Street, Perth.

ANACARDONE

Cardiovascular and Respiratory Stimulant

Diethylnicotinamide (commonly known as pyridine- β -carboxylic acid diethylamide) has won an established position in the treatment of cardiac and respiratory weakness or failure.

Diethylnicotinamide is now issued in a 25 per cent. solution by The British Drug Houses Ltd. under the name ANACARDONE.

Anacardone is indicated in all cases of surgical or obstetric shock, collapse due to narcotics or disinfectants, and in prostration, hypotension and respiratory difficulty following, or during, bacterial infections such as pneumonia and influenza.

Anacardone is issued in ampoules containing 2 c.c. and 5 c.c. for subcutaneous, intramuscular or intravenous injection and in bottles containing 15 c.c. and 100 c.c. (flavoured) for oral administration.

Literature and samples on request

THE BRITISH DRUG HOUSES (AUSTRALIA, PTY.) LTD.

250 Pitt Street, Sydney, N.S.W.



*The Spirit of Bondi Beach is symbolized
by carefree, happy people.*

Hotel Astra

Bondi Beach, Sydney

*"Where the City
Meets the Sea."*

When visiting Sydney make **Hotel Astra** your headquarters. Here you have dignified surroundings, a fine address, and an atmosphere that is exclusive only to fine Hotels.

Hotel Astra overlooks world-famous Bondi Beach, and is only ten minutes by car from the city.

Palatial and Modern, **Hotel Astra** has an alliance of smartness where you will be pleased to be called upon by your friends.

The tariff is very reasonable, being from Four to Six Guineas Weekly inclusive, and from seventeen shillings and sixpence Daily inclusive. Rooms with Bath, Private Suites with Bath, etc. Garage on premises.

You may book direct to **Hotel Astra**, or through any Government Tourist Bureau. You may also book through Thomas Cook & Sons, who are our Principal Booking Agents throughout Australasia.

A. W. OLDFIELDS HOTELS PTY. LTD.
BONDI BEACH, SYDNEY

FW 1112. 6 lines

When inquiring please mention this journal.

ETHICAL SPECIALTIES

PRESENTED BY

THE HOUSE OF WYETH

AMPHOJEL (WYETH)

Colloidal Aluminium Hydroxide Gel.
The newer treatment for hyperacidity and the medical management of gastric and peptic ulcer.

FEROMAX (WYETH)

Soluble Ferrous Sulphate combined with Vitamins B₁ and G; also with Liver Concentrate.
For the prophylaxis and treatment of hypochromic and secondary anæmias.

KAOMAGMA (WYETH)

Colloidal Aluminium Hydroxide and Kaolin:
Adsorbent and muco-coagulant in the treatment of hypermotile bowel.

SILVER PICRATE (WYETH)

Compound Silver Picrate dispersed in Kaolin:
The Insufflator treatment of Trichomonas Vaginalis and non-specific Vaginitis.

ENDRINE (WYETH)

Nasal Compound with 0.35% Ephedrine.
Soothing decongestant for the prophylaxis and effective treatment of head colds and sinusitis.

LITERATURE UPON REQUEST

John Wyeth & Brother Inc., Box 3525 RR G.P.O. Sydney

Announcement . . .

Bayer Pharma Pty. Ltd. wish to advise members of the medical profession that the existing stocks of Bayer preparations purchased from Germany before the outbreak of war should with one or two exceptions satisfy normal requirements until further supplies are obtained.

Arrangements have been made for the purchase of future supplies from the Bayer Company, Inc. of New York. This company has been American owned and controlled since 1918 and for over twenty years has been manufacturing Bayer preparations sold on the American market through the Winthrop Chemical Company, Inc.

Doctors can rest assured that every effort will be made to safeguard the supply of preparations of national importance such as 'Avertin', 'Evipan' Sodium, 'Luminal', 'Prontosil', 'Campolon', 'Prominal', 'Salyrgan', 'Perabrodil', 'Plasmoquine', 'Atebrin' and others which experience has shown to be essential in present day medical and surgical practice.



BAYER PHARMA PTY. LTD.

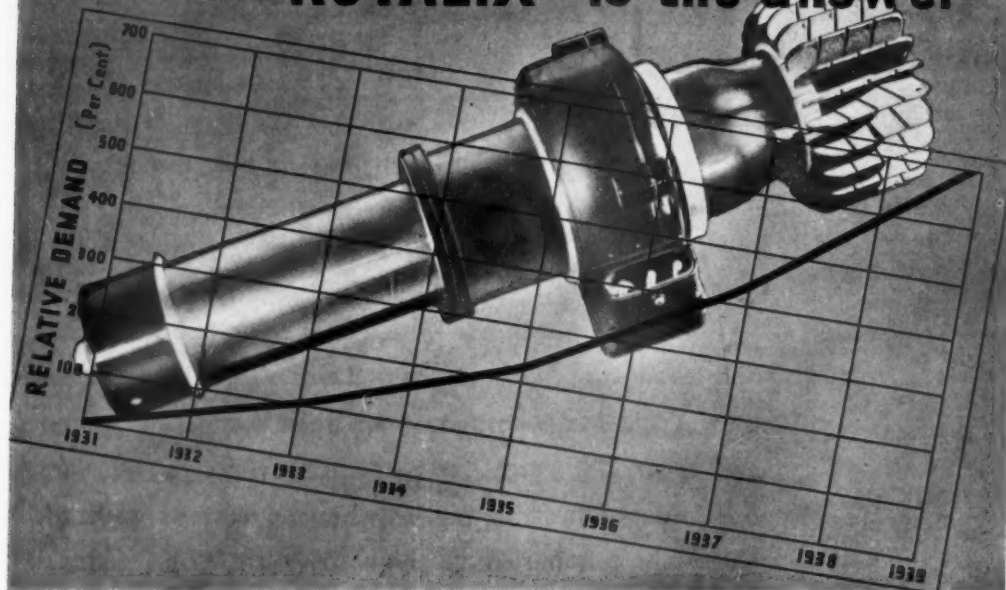
66 HUNTER STREET. SYDNEY

Distributors:

Aust.: FASSETT & JOHNSON LTD., 36-40 Chalmers St., Sydney, N.S.W.

N.Z.: FASSETT & JOHNSON LTD., Levy Bldg., Manners St., Wellington

Where quality is the demand "ROTALIX" is the answer



Shockproof and Non-Shockproof—fitted with ball bearings for operation in any position

THE demand curve for "Rotalix" has mounted ever since this tube became commercially available in 1929. Of course there's a reason . . . the radiographic quality obtained by the use of "Rotalix" cannot be achieved with any stationary anode tube.

The increasing number of "Rotalix" orders show that more and more radiologists are recognising this superiority.

The "Rotalix" has more than lived up to our claims.

The "Rotalix" is one more instance where Philips successful design is based on a sound physical principle.

Our descriptive booklet will give you the details about "Rotalix". Please send for one.

Full details on application to



PHILIPS LAMPS (A/asia) Pty. Ltd.

X-RAY DIVISION

PHILIPS HOUSE, 69-73 CLARENCE STREET, SYDNEY

AND ALSO AT 590 BOURKE STREET, MELBOURNE,
BRISBANE — ADELAIDE — PERTH — WELLINGTON

The Australian and New Zealand Journal of Surgery

JANUARY, 1940.

TABLE OF CONTENTS.

[The Whole of the Literary Matter in THE AUSTRALIAN AND NEW ZEALAND JOURNAL OF SURGERY is Copyright.]

ORIGINAL ARTICLES—

	PAGE
RICHARD WISEMAN AND HIS SEVERAL CHIRURGICAL TREATISES <i>K. F. Russell</i>	223
SIMPLE TUMOURS OF THE BREAST AND THEIR TREATMENT <i>H. Dodd</i>	228
REPARATIVE SURGERY <i>H. L. Updegraff</i>	237
THE HAMBLIN-DALLOS CONTACT LENS <i>A. J. Flynn</i>	259
SAFER SURGERY IN DOUBTFUL OPERATIVE RISKS <i>T. E. V. Hurley</i>	270
SLIPPED UPPER FEMORAL EPIPHYSIS, WITH A REPORT ON A CASE TREATED BY SKELETAL TRACTION <i>E. E. Dunlop</i>	279
FISTULA AND SINUS OF THE BLADDER <i>R. Bridge</i>	288

SURGICAL TECHNIQUE—

THE TECHNIQUE OF TOTAL HYSTERECTOMY <i>F. A. Maguire</i>	297
----------------------------------------------------------------	-----

CASE REPORTS—

TWO CASES OF RENAL NEOPLASM: GRAWITZ TUMOUR AND WILMS'S TUMOUR <i>T. Ambrose</i>	312
SUCCESSFUL RESECTION OF A POPLITEAL ANEURYSM OF TRAUMATIC ORIGIN <i>D. Robb</i>	314

EDITORIAL—

EXPERIMENTAL SURGERY	317
----------------------------	-----

SURGERY IN OTHER COUNTRIES—

TECHNIQUE AND APPLICATION OF BRANDES'S DRILLING OSTEOCLASIS	320
INTRAVENTRICULAR USE OF LIPIODOL IN THE DIAGNOSIS OF CEREBRAL TUMOURS ..	321
PULMONARY EMBOLISM	322
HYDATID DISEASE	323
THE LARGE BORE ASPIRATION TROCAR IN THE TREATMENT OF HYDATID CYSTS	323
HYDATID DISEASE IN DALMATIA	323

REVIEWS—

	PAGE
PERIPHERAL VASCULAR DISEASES	324
COLONIC AND RECTAL CANCER	324
SURGICAL TECHNIQUE IN OTO-LARYNGOLOGY	325
DIET AND NUTRITION	326
SURGICAL TECHNIQUE	326
SURGICAL SUTURES AND LIGATURES	327
VARICOSE VEINS	327

PROCEEDINGS OF THE ROYAL AUSTRALASIAN COLLEGE OF SURGEONS—

NEW SOUTH WALES ANNUAL MEETING	328
TASMANIAN ANNUAL MEETING	328
VICTORIAN HALF-DAY MEETING	329
THE GORDON CRAIG LIBRARY	329

NOTICES—

NEW DEVELOPMENTS IN SURGICAL EQUIPMENT	330
----------------------------------------------	-----

EDITORIAL NOTICES	330
-------------------------	-----



MEDICAL LIBRARY
HISTORICAL BUILDING
DES MOINES, IOWA

THE AUSTRALIAN AND NEW ZEALAND JOURNAL OF SURGERY

Registered at the General Post Office, Melbourne, for transmission by post as a periodical.

VOL. IX.

JANUARY, 1940.

No. 3.

RICHARD WISEMAN AND HIS SEVERAL CHIRURGICAL TREATISES.¹

By K. F. RUSSELL,
Melbourne.

ENGLISH surgery owes a great debt to Richard Wiseman, for it was he, more than any other man of his time, who raised it from the doldrums and gave it new life.

Born in London about 1622, he commenced his surgical career when in January, 1637, he was apprenticed at the Barber-Surgeons' Hall to one Richard Smith, a surgeon. He next appears as a surgeon in the Dutch naval forces in their war against Spain, and on his return to England, being an ardent Royalist, he joined up in 1643 or 1644 with the Royalist army of the west. After the defeat at Truro he accompanied Prince Charles to Jersey, France, Holland and Scotland in the capacity of the prince's surgeon. On September 3, 1651, being again in the wars, this time at Worcester, he was taken prisoner and marched to Chester, and in his book he relates how on several occasions he was asked by the governor of the prison to attend to the sick and injured.

Being apparently given a parole, he proceeded to London, and on March 23, 1651-2 was admitted a freeman of the Barber-Surgeons' Company.

Then followed a relatively peaceful period when he was assistant to Edward Molines at Saint Thomas's Hospital. After a short time, he set up in practice for himself in Old Bailey at the sign of the King's Head, a hotbed of Royalist activity. The peace, however, was soon to be broken, for early in 1654 he was rearrested on the charge of assisting one of his patients to escape from the Tower, surely an unusual performance for a surgeon, and on this charge he was incarcerated in Lambeth House.

With the arrival of Charles II in London, however, all Wiseman's troubles ceased, for he was immediately made "Surgeon in Ordinary to the Person", which appointment was confirmed by a Royal Warrant on August 5, 1661, and carried with it a salary of £40 per year.

¹ Accepted for publication on July 15, 1939.

On March 25, 1671-2, he was promoted to the position of principal surgeon and sergeant-surgeon to the King.

In 1665 he was appointed Master of the Barber-Surgeons' Company, and he died suddenly at Bath on August 20, 1676, being buried on August 29 in the Church of St. Paul, Covent Garden, London.

His best known work is the "Several Chirurgical Treatises", which, first published in 1676, went through the following editions: 1686, 1696, 1705, 1719 and 1734.

In this book Wiseman broke away from surgical tradition, for instead of writing about the accredited works of the older surgeons and their modes of treatment, he discusses his own cases as he himself saw them and treated them. The book therefore is a personal document and a monument to a man who had a large practice, most of which was consultant in nature, and who was esteemed by his fellow surgeons as possessing keen insight, fair-mindedness and more than usual skill.

As he himself says in his preface:

"Know, Reader, that as to these Treatises, though in preparation to them I have read all the eminent Chirurgical Authors, yet in the writing of them I was more conformed to my own judgment and experience, than other men's authority. This will consequently make them liable to the Censure of many sorts of men. Such Ancient Practitioners as are unwilling to be now learning a new lesson, will be angry that those Definitions and Descriptions, and sometimes Methods of Cure, are receded from, which they learned when young; those being the Basis on which they have built the whole superstructure of their Practice. I desire such men to content themselves with neglecting them; they being not written for their use, but for younger men, who have their Principles and Maximes of Chirurgery yet to chuse. Others wholly taken up with the Novelties wherewith this Age aboundeth, will be angry that all the new Notions are not here persued to nicety. . . . I would have these men consider, that I am a Practiser, not an Academick: that I delight in those things as far as they are useful to life, but thought it too great a digression from my present purpose to stuff up a practical Book with such Philosophical Curiosities, which become it just as well, as it would become a Divine to fill a practical Discourse with School-distinctions."

The book consists of the following Treatises: "Of Tumours", "Of Ulcers", "Of Diseases of the Anus", "Of the King's Evil", "Of Wounds", "Of Gunshot Wounds", "Of Fractures and Luxations", "Of Lues Venerea"; and the whole book is illustrated by the case histories of literally hundreds of patients who were seen by Wiseman suffering from the various conditions discussed.

Amongst the many cases is described what was possibly the earliest external urethrotomy done for stricture of the urethra.

"In the year 1652 at my return from the Battel at Worcester I somewhere assisted that most excellent Chirurgeon the deceased Mr. Ed. Molines in dressing his Patients . . . whereof I shall give you one of his operations." The patient "having been long diseased with a Carnosity, which had resisted all endeavours, and in a manner totally supprest his Urine, sent for him; he went and caused the Patient to be taken out of Bed, and placed upon a Table, with his legs drawn up, as in cutting for the stone; he cut into the Urethra near the neck of the bladder, it was hard as a gristle. His knife did not readily divide it, but so soon as he had, the Urine gushed out, which

SEVERAL
CHIRURGICAL
TREATISES.

James Hamilton

By RICHARD WISEMAN,
Serjeant-Chirurgion.

The Second Edition.

e

L O N D O N

2 2
of s

Printed by R. Norton and J. Macock, for R. Royston
Bookfeller to His Most Sacred Majesty, and B. Took at the
Ship in S. Paul's Church-yard, Anno Dom. 1686.

being discharged, he put his finger into the Urethra, and afterwards enlarged the incision upwards more to the Scrotum, then dressed it up with his green Balsam warm, by which in few days it digested, and the Patient was relieved: the lips grew also daily softer, and the wound healed apace, but all this while the Urine had no other passage, the common ductus being so closed up by reason of the Carnosity, that we could not make any way into it with our smallest probes or candles. Upon which consideration it was thought necessary to keep this opening in perineo for the discharge of Urine, and in order thereto it was dressed up with a Dossil, an Emplaster and Compress, which the Patient took off at times to ease Nature. But this not satisfying him, he frequently complained of his unhappy condition; insomuch that Mr. Ed. Molines being wearied with the Patient's solicitation, took me one morning along with him, where again he placed the Patient as before, and attempted to make a way from the Apex into the Urethra, but it was in vain. Whereupon he caused one of his Servants to hold the one leg, and myself the other while he took up the Testicles, and put the one into my hand, and the other he placed in the hand of his Servant; then with his knife he divided the Scrotum in the middle, and cutting into the Urethra slit it the whole length to the incision in perineo; then with a needle and thread stitched the skin over the urethra, as also the Scrotum, leaving the Testicles covered, as before, and dressed them with agglutinatives by which they were cured in few days. But the Urine nevertheless continued to flow by the opening in perineo."

Wiseman's experiences as a military surgeon are scattered throughout the book, but the following anecdote is probably one of the best:

"At the siege of Weymouth I was called at break of day to an Irishman of Lieutenant-Col. Ballard's Regiment, who shooting off his Musket, it brake, and tore his Hand to pieces after a strange manner. I designed to cut off his Hand, sent presently to my quarters to one of my Servants to bring both Saw and Knife, also Dressings, of which at those times we had always ready. They being brought, I took a red Ribbon from off my Case of Lancets and bound it about his arm some four fingers breadth above the Carpus; and having cut the Flesh round off, I bared the bones, and separated the flesh between them. Then I sawed off the Bones, and untied my Ligature, and bringing down the musculous Flesh and Skin over the end of them, without making any cross Stitch, I drest up that Stump with Restrictives and good Bandage, and returned again to my Quarters. I had not been one hour gone, but I was sent for again to this Souldier, he being grievously pained. I wondred at it, and hastened away: But before I came to his Hut, I heard him crying. I enquiring the Cause . . . he told me he was not able to endure that red Ribbon that I tied his Arm with. I was at first surprized to think I should leave the Ligature upon his Arm, that being a sure way to bring a Mortification upon the Part. I therefore put my hand in my Pocket, and feeling the Ribbon on the Case of Lancets, shewed it to him. He seemed at first to doubt it; but after he saw it was so, he laught, and was from that time at ease. Two days after, our men were chafed out of the Town and Chappel-fort. I was at the same time dressing the wounded man in the Town almost under the Chappel-fort, and hearing a woman cry, Fly, Fly the Fort is taken; I turned aside a little amazed towards the Line, not knowing what had been done: but getting up on the Works, I saw our people running away, and those of the Fort shooting at them. I slipt down this Work into

the Ditch, and got out of the Trench; and so I began to run, hearing one call, Chirurgion, I turned back, and seeing a man hold up a stumped Arm, I thought it was the Irishman whom I had so lately dismembered: whereupon I returned, and helpt him up. We ran together it being within half a Musket-shot of the Enemies Fort; but he out-ran me quite."

The very great difficulty under which the surgeons of his time laboured is rather amusingly told in the following:

"In the time of the last great Sickness, whilst I was in the Country, a young Woman was brought to me who had a large unequal Tumour near her Neck, movable, and without Inflammation. I, designing to take it out by incision, prepared Dressings ready, and had 2 Women and a Boy that I had taken to attend me that Journey, present to assist me. During the separation of the skin from the Wound, it bleeding, my two Women left me, and the Boy dropt down in a Swoon: the Patient also growing froward, and the work of Separation being not very easie, I was put upon a necessity of cutting into the Cystis the whole length: in the doing of which there discharged about half a large Porringerfull of materia polenta: after which putting in my hand, I pulled out a hard body of Suet. It was a Steatoma, and weighed 9 ounces and a half. Then I fill'd the Cystis with Stupes of Tow dipt in a mixture of unguent basilicon and ol. terebinth. hot; and bringing the Lips of the Wound over it, applied an emplastr. *à bolo*, with convenient Bandage, to retain the Dressings, there being no appearance of its bleeding."

In his Treatise on Hernia he described at length the manufacture and fitting of trusses and other modes of treatment. When it comes to the cure of a strangulated hernia, however, he suggests that the best treatment is to lay open the hernia and repair the abdominal wall.

"I would ask whether in such a case it be not more reasonable to offer in Consultation the laying open the Production while there is strength, than to suffer the Patient miserably to perish under the Disease. . . . To perform this Operation, the Patient ought to be laid flat on his Back upon a Table or Form, and bound thereon: then an Incision must be made upon the upper part of the Scrotum to the Production, which requireth also to be divided, without touching the Intestines or Omentum: then you are to pass in a Cannula (like our common Director, but as big as a large goose-quill) into the Cavity under the Process of the Peritoneum upwards, avoiding the Intestines; then make your Incision of such a length as may serve to put your fingers into the Scrotum, and raise the Intestines and Omentum, which you are to reduce into their natural place within the Belly. They being thus reduced, you must stitch up the Wound, taking up with your Needle so much of the Production as may shut up the Cavity, and prohibit the relapse of the Intestines."

The illustration to this memoir is the title page of the second edition of Wiseman's work. It bears the signature of James Hamilton and the writer believes that this is the signature of the man who was Deacon of Surgeons in Edinburgh from 1702 to 1704.

BIBLIOGRAPHY.

"Dictionary of National Biography", Volume lxii, 1900.

Fielding H. Garrison: "An Introduction to the History of Medicine", Fourth Edition, 1929.

SIMPLE TUMOURS OF THE BREAST AND THEIR TREATMENT.¹

By HAROLD DODD,

Surgeon to the King George V Hospital, Ilford, and to the Royal Hospital, Richmond;
Assistant Surgeon to the London Homœopathic Hospital.

SIMPLE tumours of the breast are of common occurrence and are oft-times quite erroneously considered to be of little consequence, a statement which perhaps applies particularly to their treatment. They are removed in private houses and in consulting rooms, whilst in hospital the house surgeon is inclined to look upon them as his perquisite, and enterprising residents remove them in the out-patient department. There is, however, one very important aspect of these mammary swellings which tends to be overlooked, and this is, that a definite proportion of them are early malignant tumours. If a carcinoma ever is curable, it is when it is in this apparently benign stage. Boyd⁽¹⁾ writes that:

Of the true tumours of the breast 95% fall into two growths, fibro-adenoma and carcinoma. The former constitute about 15% and the latter 80%. Every tumour of the breast should be regarded as malignant until it has been proved to be innocent, and the only way to make certain is to make an exploratory incision and judge either from the gross or from the microscopic appearance. An early carcinoma may so resemble a fibro-adenoma clinically as to deceive the very elect.

All operations for innocent swellings, therefore, should be designed to take this neoplastic contingency into account. The writer submits that breast tumours should never be enucleated; they should be removed *en bloc* with the surrounding lobe, that is, the operation should be a lobectomy. In his practice he finds once or twice a year a clinically simple tumour to prove, on either microscopic or macroscopic examination, to be malignant.

The purpose of this article is to review the benign mammary growths and to describe the writer's technique of lobectomy. The latter details are added because, although any practitioner may be required to perform the operation, surgical text-books are consistently silent on the precise steps of this simple yet important procedure, which may, without a clear plan of action, prove to be a tedious, sanguinary and unsatisfactory affair, not to mention the serious danger to the patient of cutting into an early cancer.

In 1937 the writer operated on 16 cases of undoubted simple tumour of the breast clinically; yet of these, two were certainly malignant macroscopically, and another, a translucent cyst, was stated to be "highly suspicious" by the pathologist. In addition, in the past ten years, two patients who had had lobectomies performed within the previous year for fibro-adenomata (the diagnosis being confirmed by microscopic section) returned; they complained of several nodules in the scar in the breast tissue (not in the skin). These were diagnosed as malignant nodules, and following radical

¹ Accepted for publication on October 14, 1938.

amputation of the breast, histological examination confirmed the diagnosis. Such an experience, it may be held, is due to indifferent diagnosis; but as an interest has been taken in these tumours for nearly ten years, the clinical judgement in the cases mentioned should at all events be about equal to the average.

BENIGN TUMOURS OF THE BREAST.

The breast consists of skin, secreting gland with ducts, and fatty areolar tissue, with a free blood and lymphatic supply. Simple tumours may develop from all these tissues. The mere enumeration of the possibilities forms an imposing list, but the list of simple tumours consists of cysts (serous, retention and interstitial), papillomata of the nipple and ducts, and fibro-adenomata in young women aged from eighteen to thirty years, and in an older group aged from thirty-five to fifty-five years.

The three that occur often are: fibro-adenomata, duct papillomata and cysts.

Fibro-Adenoma.

There are two types of fibro-adenoma: intracanalicular fibro-adenoma and periarticular fibro-adenoma.

Intracanalicular Fibro-Adenoma.—An intracanalicular fibro-adenoma is more fibrous than glandular and looks somewhat like a cut cauliflower on macroscopic section. It may resemble a soft carcinoma on section, but it is encapsulated. Small pedunculated papillomata can be picked up from the cavities, and occasionally cystic degeneration takes place and the tumour develops to considerable size. The tumour is usually translucent. Occasionally fibro-adenomata become cystic and then resemble the single cyst associated with chronic mastitis. They are found in women aged from thirty-five to fifty-five years. In former days they occasionally grew and burst through the skin, simulating malignant tumours; but in these more enlightened times patients rarely allow such a stage to develop before seeking advice.

Periarticular Fibro-Adenoma.—The periarticular fibro-adenoma is characterized by its extreme mobility; it bobs about in the breast like a "cork on water". It is hard to touch, but can be cut easily with the scalpel, and does not give one the sensation of cutting a raw turnip as do carcinomata. Patients in whom these tumours occur are usually nervous and emotional, are debilitated and may complain of neuralgic pains. The tumour consists of fibrous and glandular tissue, the former predominating, and it is surrounded by a fibrous capsule. It is usually the size of a walnut, and occurs less frequently than the intracanalicular fibro-adenoma. The tumour can be shelled out of the breast, and perhaps this procedure is permissible in patients up to twenty-five years of age, although the author never practises it, for he has several times seen in such cases one or more recurrences in the vicinity of the operation area, while the lobectomy described later leaves little scar and no deformity of the organ. Hugh Auchincloss's experience is worthy of mention.⁽²⁾ He says:

It has become customary to look lightly on freely movable tumours in the breasts of young women. The case referred to in Fig. 48 definitely demonstrates that this cannot be done. The lump in this case was clinically a fibro-epithelial tumour because of its apparent encapsulation and mobility and because the woman was only 23. The discovery that it was a circumscribed cancer was an experience too dramatically tragic ever to be forgotten. The lesson to be learned is, that lumps in the breast, even in young women, and clinically benign, cannot be assumed to be harmless.

Duct Papillomata.

The term "duct papilloma" is applied to small papillomatous outgrowths into the lactiferous ducts towards their terminations near the nipple. A cyst develops about them, and this is the tumour which may ultimately be palpable in the breast; it is a form of retention cyst. The tumour is vascular, and for this reason the trauma of ordinary, everyday life soon stimulates a blood-stained or bloody discharge at the nipple, a feature which is more prominent than the tumour formation. In the early stage the discharge may be only serous. It is an interesting point that pressure on the same part of the breast causes discharge to appear at the same place on the nipple, thus indicating its connection with a duct.

Boyd⁽³⁾ says: "There appears to be a definite relation between duct papilloma and duct carcinoma."

Duct papillomata usually appear between the years of thirty and forty. The writer regards them with suspicion and always advises treatment by early mastectomy. This may appear a drastic remedy when a tumour is not palpable, but it is a safe one, and malignant disease inadequately treated is inevitably fatal—a grim truth not always fully realized. The temptation to carry out conservative operation with retention of the nipple is an attractive one which should be firmly resisted.

Cysts.

Single Cysts.—A single cyst is often part of a chronic or lobar mastitis, and usually occurs in women over thirty-five years of age. Occasionally there is slight discharge from the nipple. The consistency varies. The cyst may clearly contain fluid, as indicated by fluctuation and translucency, or may be so tense as to feel apparently solid and indistinguishable from a solid tumour, but it does not feel heavy. Shattock⁽⁴⁾ says of them:

The nipple may become slightly retracted from fibrosis round a cyst of long standing close to the nipple.

The swelling may distort the contour of the breast. The cyst is circular or elliptical in shape, and it is generally movable in the breast tissue from side to side, but not always radially from the nipple. The associated chronic mastitis may give the cyst a lobulated, indefinite outline. The axilla may contain small insensitive glands and the opposite breast may also be nodular with chronic mastitis. Sometimes the cyst is quite small and hard, and raises a suspicion of the presence of early carcinoma or a fibro-adenoma. Shattock⁽⁵⁾ says:

An elastic soft carcinoma or one which is cystic from degeneration, not yet fixed to skin or pectoral fascia, will simulate such a cyst.

This fact emphasizes the dangerous potentialities of apparently benign breast swellings.

Multiple Cysts.—Multiple cysts scarcely enter the scope of this article. Their multiplicity suggests their benign character, and they require an anatomical mastectomy rather than lobectomy.

Galactocele.—A galactocele is a retention cyst of milk due to obstruction of a main duct after lactation. It is not a common swelling.

OTHER SIMPLE TUMOURS.

For academic completeness, the other possible tumours may be mentioned. These are chronic pyogenic abscess, tuberculous abscess, gumma, an area of fat necrosis after a blow, lipoma, pure adenoma, hæmatoma which may closely mimic carcinoma, single serous cyst and hydatid cyst.

It will be noticed that lobectomy rather than enucleation will avoid trouble and danger in several of these rarer swellings.

THE OPERATION OF MAMMARY LOBECTOMY.

When embarking upon mammary lobectomy, the surgeon has two objects in view. The first is to excise *en bloc* a lobe of the breast containing an apparently simple tumour, but because this tumour may be malignant,

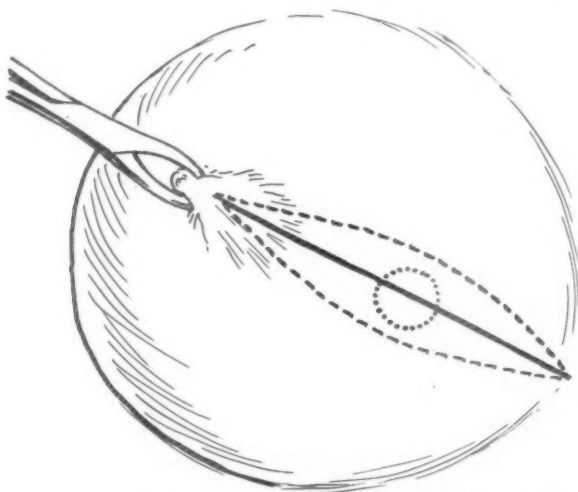


FIGURE I. The nipple grasped and drawn diagonally away from the tumour, which is outlined. The firm radial line is the site of the incision when the swelling is small. The interrupted line outlines the elliptical area of skin removed in the presence of a larger tumour.

he wishes to avoid incising the tumour or the neighbouring lymphatics which run subcutaneously and on the deep fascia between the breast and *pectoralis major*. Secondly (but of lesser importance), as the tumour is probably simple, he aims not to deform the breast and to leave an inconspicuous scar.

The Anæsthetic.—A general anæsthetic such as nitrous oxide and oxygen, cyclopropane or open ether is suitable. The operation can be done quite well under local infiltration with a pre-anæsthetic administration of "Omnopon", 0.03 gramme (half a grain), and scopolamine, 0.0004 gramme (one one-hundred-and-fiftieth of a grain).

The Incision.—The nipple is seized by a pair of towel forceps (see Figure I) and the assistant draws this diametrically away from the tumour. The incision is made with a really sharp scalpel, beginning at and radiating

from the nipple, and passing precisely over the centre of the tumour to the circumference of the breast. If the swelling is a large one, the resulting cavity will be considerable and the skin redundant; it is then advisable to excise an elliptical area of skin from the region superficial to the tumour. This method has the additional advantage of removing the subcuticular lymphatics in continuity with the swelling. This ellipse of skin is outlined accurately in order to obtain a uniform scar; the writer scratches it with the point of the scalpel before making the incision. The cut passes only through the skin; this is why a sharp scalpel is necessary, so that the effort required for the penetration can be correctly gauged. A thin fatty layer lies between the breast envelope proper and the skin, and it is the surgeon's aim to keep

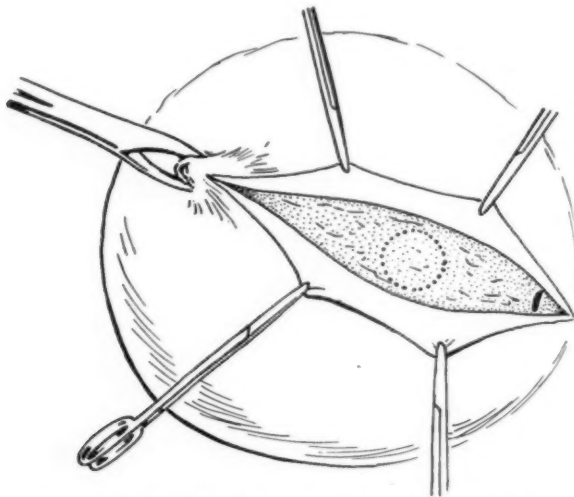


FIGURE II. The skin flaps reflected, free of fat, from the swelling. The short thick black line at the periphery (or it may be radially) indicates the site where the breast tissue is incised down to muscle.

outside of this until the outer limits of the tumour are comfortably passed. The skin edges are vertically elevated with Lane's forceps, held by the assistant, and the skin flaps are flayed back devoid of fat or vessels, until the tumour is the centre of an elliptical area with a free margin of 1.25 centimetres (half an inch) from it. The reflection extends from the nipple to the mammary circumference, and then, at the latter point, the fatty tissue is incised deeply with the scalpel down to the fibres of the *pectoralis major* (see Figure II). This opening is stretched by scissors until the muscle fibres are clearly visible. First one and then two fingers are inserted beneath the gland, seeking the plane of cleavage between the breast above and bare muscle fibres below; anything shallower or deeper causes unsatisfactory stripping; the right plane separates easily. The fingers are insinuated until the lobe is mobilized and elevated from the periphery to beneath the nipple. When the swelling lies in the outer quadrant of the breast on the axillary wall, the plane of cleavage is not so easily found and the fingers may burrow under

the *pectoralis major*, but to realize this possibility is to overcome the difficulty. In a poorly developed woman, the *pectoralis major* is not palpable, in which case the writer begins the lobectomy at the periphery and continues it until *pectoralis* muscle appears, when the stripping layer is easily defined, and the artery forceps are driven in at the nipple on to the fingers (as below).

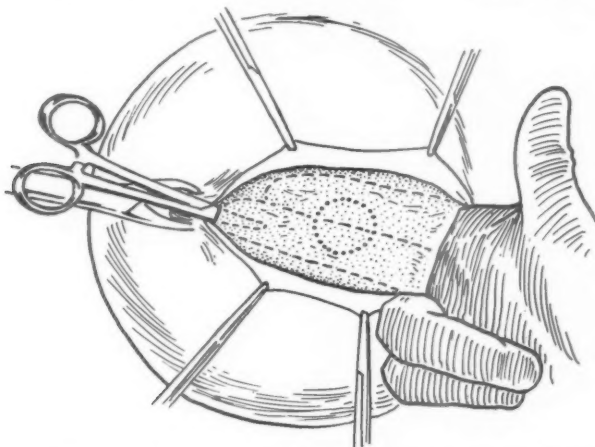


FIGURE III. The fingers in the plane of cleavage between the breast above and *pectoralis major* beneath. A pair of curved artery forceps has been thrust through the breast tissue and rests on the fingers. Thus the lobe containing the swelling is completely defined.

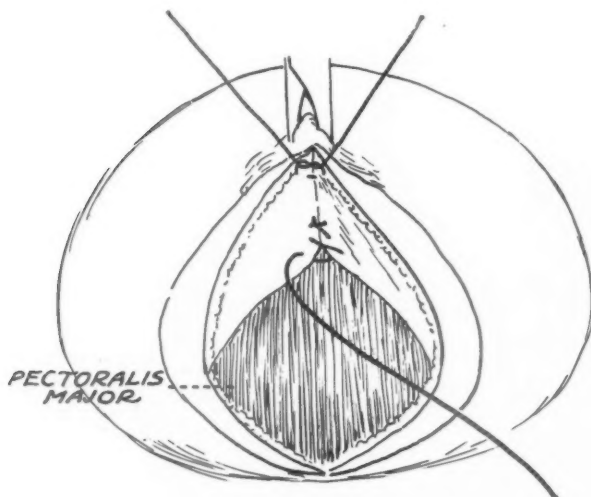


FIGURE IV. The lobe has been removed and the resulting dead space is being obliterated by a superficial and a deep suture.

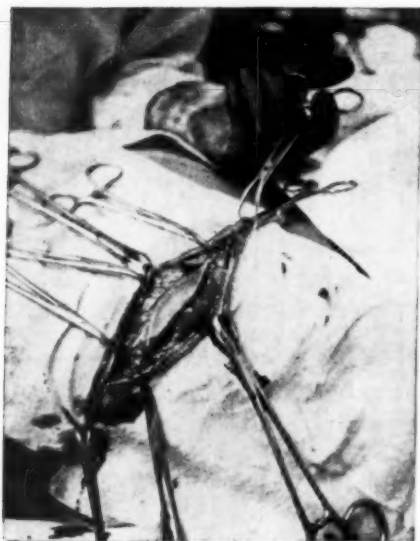


FIGURE V. The elliptical area of skin outlined over the tumour (actual case).

an easy step to excise the triangular area lying upon the surgeon's fingers and limited centrally by the forceps. A large pair of scissors or a scalpel is used; a strong cutting instrument is necessary, for breast tissue, which is recognized by its dead white colour, is tough. During this stage there is considerable hæmorrhage from the superficial and deep surfaces of the breast. The bleeding vessels are readily picked up by the assistant as the excision proceeds snip by snip.

The lobe having been removed, a large cavity remains and the bleeding is at times copious, for the breast is more vascular than is generally supposed. Bleeding points in the breast tissue itself are sometimes difficult to pick up on account of its denseness. The divided vessels are tied off.

The Obliteration of the Cavity.—The resulting wedge-shaped space in

The Excision of the Lobe.—The next step is a little difficult. It consists of the insertion of a pointed pair of curved artery forceps, such as Dunhill's gall-bladder forceps, vertically down through the centre of the nipple and breast into the plane of cleavage in which the surgeon's fingers rest (see Figure III). This is very important because it marks with precision the apex of the lobe to be removed; otherwise the surgeon in his zeal to remove the swelling widely can easily excavate a considerable area of breast beyond the nipple, thus damaging the ducts and removing unnecessary tissue. Some breasts are very tough and impenetrable by the points of the average artery forceps, in which case a fine-bladed scalpel is used to cut the track for the forceps. The limits of the lobe are now defined, and it is



FIGURE VI. Showing (a) the flaps reflected, (b) the surgeon's fingers insinuated between the breast and *pectoralis major*, (c) the curved Spencer-Wells forceps driven vertically through the nipple and resting on the fingers.

the breast is closed by approximating the deep and superficial edges of the cut white breast tissue by a continuous suture (see Figure IV). A stout half-circle cutting needle with number 0 catgut is used. The first stitch commences at the apex of the deeper V; it is tied and proceeds continuously to the periphery. If the sector removed is small, then the stitch returns subcutaneously to the nipple, so closing the superficial V terminating at its apex. When a large portion of breast has been excised, the obliteration of the gap at the circumference is not so easy, in which case another continuous suture is begun immediately under the nipple before the deep stitch is finally tied. The assistant meanwhile presses the breast so as to close the space, and the catgut sutures are pulled tight and knotted. The skin is closed by clips or by interrupted fine silkworm gut



FIGURE VII. Showing the resulting cavity after the lobe has been excised.



FIGURE VIII. The cavity obliterated and the wound closed.

stitches, either being removed on the fourth or fifth day. A drainage tube is rarely necessary, except in the case of large breasts with free oozing, when a small tube is inserted for twenty-four hours, being brought out at a suitable point. A voluminous dressing is applied and is held by a many-tailed bandage. The patient gets up next day, and usually leaves hospital within a week.

Figures V, VI and VII are photographs of the operation at various stages, and in Figure VIII the cavity has been obliterated and the wound closed.

The Tumour.—The tumour is sectioned macroscopically immediately it is removed. Should it be obviously carcinomatous, a swab wrung out in pure carbolic acid or a 1 in 500 solution of perchloride of mercury is inserted into the cavity;


this is to fix any neoplastic cells incised and free in the area. The skin is closed by two or three temporary sutures. The towels, instruments and gloves are changed and the radical operation is proceeded with.

In all cases the tumour is sent for rapid microscopical section, the report on which should be available within one week at most. Should the tumour prove to be malignant, radical amputation is immediately performed, for although the tumour may have been widely removed, this constitutes no reason for a modification of the classical excision *en bloc* of a wide area of skin, deep fascia, pectoral muscles, axillary glands and upper part of the *rectus abdominis* sheath. As already mentioned, in the past ten years the writer has removed fibro-adenomata by lobectomy from two patients both of whom, however, returned within a year with nodules in the breast scar which proved to be carcinomatous. His experience does not therefore support D. C. L. Fitzwilliams, who has commented favourably on merely a wide local excision for early carcinomata of the breast; another easy method found wanting!

SUMMARY.

The simple tumours of the breast are reviewed, the principle of their treatment by lobectomy rather than enucleation is discussed, and the precise steps of a method of lobectomy are described.

REFERENCES.

- (1) W. Boyd: "Surgical Pathology", page 533.
 - (2) Hugh Auchincloss: In "Nelson's Loose Leaf Living Surgery", Volume iv, page 27.
 - (3) W. Boyd: *Loco citato*, page 537.
 - (4) Shattock: "Surgical Diagnosis", page 407.
 - (5) Shattock: *Loco citato*, page 408.
- 

REPARATIVE SURGERY.¹

By HOWARD L. UPDEGRAFF,
Hollywood, California, U.S.A.

PRE-OPERATIVE meditation plays a most important role in reparative surgery. Surgical experiences of the past 2,000 years have been crystallized by the necessities of the past 25 years sufficiently to allow for the deserved recognition of this important specialty.



FIGURE 1A. The combination of hare-lip and cleft-palate has been treated most successfully by closure of the lip defect first, special attention being paid to the reconstruction of the floor of the nostril. The gentle pressure of the lip after closure materially influences the closure of the anterior cleft of the palate.



FIGURE 1B. The cleft closure is done during the late second or third year. The parents are urged to refrain from "baby talk" to the child, and every endeavour is made to build up the general health before the cleft palate surgery is attempted. For anaesthesia a gas-ether combination is used, with intrapharyngeal insufflation.

Our greatest problem today, from the viewpoint of the reparative surgeons, is the training of new men and the consolidation of the interests of the men now engaged in this type of work. The average man seeking training in reparative surgery technique today will find little or no opportunity of doing actual operative work under instruction. He can, however, find one or two short post-graduate courses, or follow some acknowledged

¹ Delivered at the annual meeting of the Royal Australasian College of Surgeons, March 25, 1938. Accepted for publication on April 7, 1938.



FIGURE IIA.

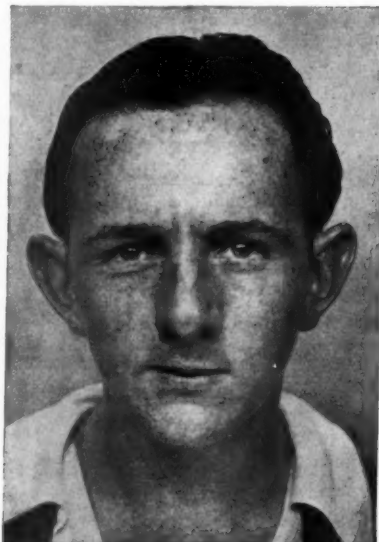


FIGURE IIIA.



FIGURE IIB.

FIGURE IIA. This girl had a repair of the upper lip in infancy, leaving a well-defined notch. The redundancy of the tissue on each side of the lip allowed complete removal of the middle third of the mucous membrane of the lip and subsequent closure.

FIGURE IIB. The important point in the closure of lip defects in adults is the support of the external suture lines. Through-and-through tension sutures tied over small buffer pads should be left in place for ten days.

FIGURE IIIA. Many cases of juvenile delinquency can be traced to personal complexes developed as a result of the gibes of playmates directed toward anatomical abnormalities. Large ears are a common complaint, and are best reconstructed at puberty.



FIGURE IIIb.



FIGURE IVa.

FIGURE IIIa. A heart-shaped incision is made behind the ear after first marking the points outlining the line of the incision on both the ear and the head. A long strip of ear cartilage is excised near the head, to break the spring, and still to preserve the normal ridges of the ear contour.

FIGURE IVa. Modified hearing is usually present in about 60% of congenital ear deformities of this type. Repair involves first the planting of cartilage from the other ear or a rib, and covering it with thin skin grafts to build a framework for the new ear.

FIGURE IVb. A small pedicle tube is raised from the neck and may be planted behind the ear or as an intermediate stage attached direct to the helix.



FIGURE IVb.



FIGURE IVc.



FIGURE VA.

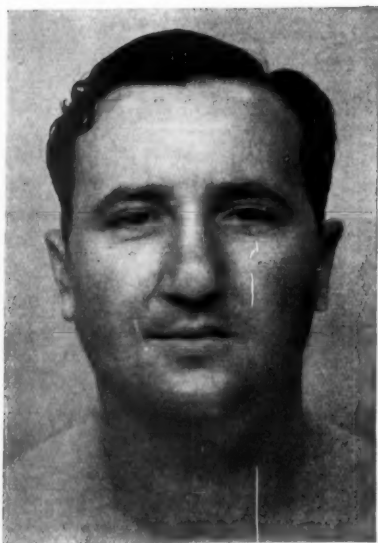


FIGURE IVd.

FIGURE IVc. The tube is later partially split and used to form the complete helix. The excess tube is planted wherever the demand is greatest. An opening of the canal is simulated, unless a patent canal can be demonstrated beyond doubt, at puberty.

FIGURE IVd. It is sometimes necessary to set the opposite ear back farther to ensure a more pleasing symmetry. The change in the patient's mental outlook is as marked as the cosmetic improvement.

FIGURE VA. This shows a congenital saddle nose needing reconstruction of the nasal arch.



FIGURE Vb.



FIGURE Vc.

FIGURE Vb. Careful observations on a plaster mask of the face and photographic records aid in the planning. These cases are a problem. If the operation is carried out before puberty, a second stage will very likely be necessary after complete development of the skull has occurred.

FIGURE Vc. An extra amount of rib cartilage may be procured during the first stage and embedded under the abdominal skin for future aid, avoiding a secondary rib removal.

FIGURE Vd. The use of foreign material for nasal arch reconstruction has proved impracticable. However, rib cartilage from other patients is better than foreign material, if the patient's condition precludes a thoracotomy. We are preserving our spare cartilage at present in an aqueous solution of 5% "Merthiolate", refrigerated and decanted every ten days.



FIGURE Vd.



FIGURE VIA.



FIGURE VIIA.



FIGURE VIB.

FIGURE VIA. The body of the left mandible is missing, as a result of an old osteomyelitis, following a dental infection. The patient applied for jaw support to allow for the fitting of a lower denture.

FIGURE VIB. Advantage being taken of the natural curve of the ninth rib, to supply the jaw contour. An external incision was made under the chin, the old scar tissue being removed, thereby forming a pocket for the graft, which was anchored in place with heavy chromicized catgut.

FIGURE VIIA. Healed wounds involving the ala and floor of the nose require almost a surgical re-enactment of the original injury, to allow for adequate repair. We like to wait at least three months after the injury, unless opportunity is given for immediate repair.



FIGURE VIIb.



FIGURE VIIa.

FIGURE VIIa. The ability to swing the undercut flaps into the natural "grin line", contributed markedly to this result. A hard rubber, perforated nasal splint, inserted into the nostril directly following repair, and worn from three to four weeks, will materially influence the shape of the nostril and prevent excessive connective tissue formation.

FIGURE VIIb. The problem of the removal and prevention of keloid scars demands a many-sided attack. This young girl sustained a hot water burn, which became keloidal, and remained so, in spite of moderate X ray radiation. We excised the growth and undercut the surrounding skin widely, in order to effect a closure without the introduction of catgut for support.

FIGURE VIIc. The incision line was supported, instead, with adhesive tape worn for two months, which exerted a slight pressure to the scar line. Practically all "burn" keloids occur in people with a low basal metabolic rate. Small doses of thyroid extract, both pre- and post-operatively, are of value. Frequent small but early applications of radium filtered through one millimetre of platinum are worth while.



FIGURE VIIc.

leader as a preceptor until he feels competent to attempt the work himself. As a result of such pioneering a great many different techniques have been evolved and much interesting progress in the field has been made.

Apart from the necessity of providing training, and that of the recognition of men with adequate instruction and ethical standing, we have certain technical problems which daily puzzle us. Among them are the prognosis of scar disappearance, the causation and treatment of keloids, the perfecting of a universally accepted antiseptic, the reason for skin graft discoloration,



FIGURE IXA. There is an increasing demand for facial cosmetic surgery to repair the sagging of the skin brought on by age, illness, reducing regimes, or worry. The incision is made close to the ears, almost encircling them; the excess upper angles, caused by the operative shift of the skin, is removed inside the hair-line.



FIGURE IXB. The removal of small ellipses of upper eyelid skin, to allow the incision line to be placed in the eyelid fold, when the eye is open, is of value. The removal of too much facial tissue places a strain on the incision lines and is liable to result in noticeable scarring. Meticulous hæmostasis is necessary.

the tendency of costal cartilage to curl after transplantation, and the possibility of preservation of cartilage for grafts to be used in other cases. Let us, however, review some of the advances up to the present time.

CONGENITAL DEFORMITIES.

Congenital deformities are common, those of the hare-lip and cleft-palate being most noticeable. Present opinion favours repair of the lip defect first and cleft-palate repair some time later, after the lip closure has influenced the anterior cleft closure. The ultimate cosmetic result in lip surgery does not particularly depend on the age of the patient, provided that operation is correctly carried out (Figures IA, IB, IIA and IIB).

Greater public knowledge of reparative surgery has led to a marked increase of new patients seeking relief from ear deformities. The most common is that of "lop" or protruding ears (Figures IIIA and IIIB), which seem to have become an insurmountable barrier to success, in spite of the overcoming of such an obstacle by several of our prominent screen stars of today. The type of ear deformity that is a real tragedy is that of congenital absence of one or both ears. I have to date some eighty cases under reconstruction, no two alike in their reconstructive problems (Figures IVA, IVB, IVc and



FIGURE XA. Reconstruction of the breast, in people making a living on the screen or stage, is often of tremendous importance. Its success depends entirely on the amount and character of the tissue to be removed and the correct placement of the incisions.



FIGURE XB. This patient presented a moderate breast enlargement, with non-nodular tissue and the possibility of placing the incision underneath the breast in the normal fold. This type of breast reconstruction allows of a functional breast as an end-result.

IVD). The main handicaps are the insufficiency of any standard method and the desire of the parents to demand a complete ear reconstruction before the full extent of skull development has taken place.

CARTILAGE IMPLANTATION.

Where cartilage implantation is required for reconstruction of deformities that demand solid repair of losses of similar substances, such as occur in nasal arch (Figures VA, VB, Vc and VD) or mandibular defects (Figures VIA, and VIB) and allied conditions, reconstruction is still predominantly carried out by means of cartilage from the patient's body. Attention, however, must be called to the work now being successfully done by utilization, after



FIGURE XIA.



FIGURE XIB.



FIGURE XIC.

FIGURE XIA. This type of breast is the opposite from the preceding one. The breast is non-functional, full of hard adenomatous masses, and represents surgical difficulties in reconstruction, if the ordinary methods are pursued.

FIGURE XIB. This patient desires normal looking breasts with natural appearing nipples. The centre portions, with the nipples, are first excised, planted in holes in the skin at a point where the nipple normally would be, and allowed to act as full thickness grafts (author's method).

FIGURE XIC. After three weeks' time the new nipple grafts have taken and the breasts are amputated, leaving only thick fatty flaps. These are fashioned by taking advantage of the normal contraction occurring during surgery, to form acceptable cosmetic breasts.



FIGURE XIIA.



FIGURE XIIb.

FIGURE XIIA. The operation of total rhinoplasty is the oldest one in plastic surgery, being first described in print in the sixteenth century. One advance has been to supply a lining for the nose by the insertion of a graft, before the forehead flap is brought down.

FIGURE XIIb. All of the surrounding nasal tissue has been sacrificed because of its suspicious character. A graft has been inserted under the flap now attached to the nose. A full thickness graft has been placed on the forehead preparatory to the repair of the defect necessitated by transplanting the end of the flap.

FIGURE XIIc. This patient has been released from hospital after some seven weeks. The picture shows his condition three months after operation. There has been no recurrence of his malignant condition during the past seven years.



FIGURE XIIc.



FIGURE XIIIa. This small boy suffered a third degree burn of the hand, with subsequent adhesions of the dorsal tendons and cicatricial involvement, preventing movement of the third and fourth fingers. Careful dissection and removal of all of the scar tissue, followed by a full thickness skin graft taken from the abdomen, was performed.



FIGURE XIIIb. Six months after the operation the function was normal. Reparative surgery of the hands in healthy infants is particularly gratifying because of their tendency to heal readily. Syndactylism and associated hand deformities can be most satisfactorily healed.



FIGURE XIVa. An old burn of the hand with resultant ankylosis of the joints of the first and fourth fingers and shortening of the abductor tendons is shown here. I hesitated in placing full thickness grafts, because of the necessity of applying pressure, to ensure that the grafts would take, over such an operative field.



FIGURE XIVb. The release of the finger contracture being accomplished, the tissue was allowed to granulate under wax gauze mesh with a mild pressure dressing. Ten days later the resulting tissue bed was covered with thin grafts.



FIGURE XIVc.



FIGURE XVa.

FIGURE XIVc. The grafts took nicely, and moderate physiotherapy was instituted early. The picture shows the post-operative result some sixty days later, with a good functional recovery.

FIGURE XVa. A severe gasoline-explosion-burn of a small boy's legs presented this condition six months after the accident. Both tibiae were clearly visible, and the contracted leg muscles were suspended in a purulent exudate.

FIGURE XVb. A month's hospitalization with constant wet dressings of boric acid and magnesium sulphate, with weekly blood transfusions, prepared the legs for split skin grafts. The illustration shows the condition sixty days after operation.



FIGURE XVb.

refrigeration, of rib cartilage remnants from other patients. Kept in 5% "Merthiolate" solution, rib cartilage can be preserved in the ice box for periods of up to six and eight months.

COSMETIC PROBLEMS.

The removal of scars (Figures VIIA and VIIB) presents mainly the problem of the patient's healing reaction to clean-cut incisions and careful approximation, as compared with his reaction to traumatic defects, caused



FIGURE XVI. This shows another gasoline-explosion-burn of the left lower leg. The patient was cared for at home without medical aid and a contracture resulted. It was necessary to free the contracture and place the leg in constantly increasing traction, to extend it before grafting.



FIGURE XVII. The enlargement of the knee joint is due to excess scar tissue, but does not interfere with function. The result shown above is after three months of hospitalization and demonstrates the functional return.

by unpremeditated forces. The great question here is whether normal primary union, with unnoticeable scars, results, or whether that dread spectre of keloid involvement (Figures VIIIA and VIIIB) ensues. The advance of knowledge of the healing of incisions has allowed us to perform with confidence delicate cosmetic surgical procedures (Figures IXA and IXB) which several years ago were followed by dissatisfaction due to the tell-tale surgical marks. Breast surgery for cosmetic improvement and release from the burden of heavy pendulous breasts (Figures XA and XB) has been further advanced by its acceptance, as a good surgical risk, of patients with the very large nodular hypertrophied type of breast classified as potentially malignant (Figures XIA, XIB and XIC). This type of surgery is now possible as a result of the new

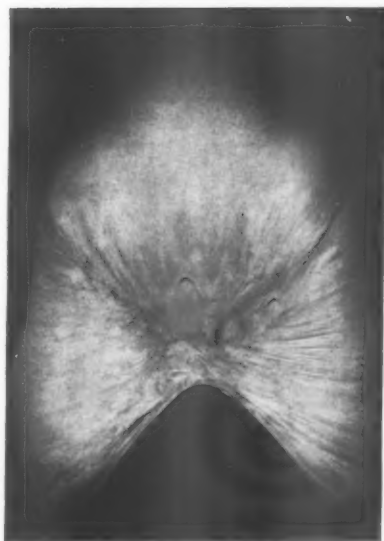


FIGURE XVIIa.



FIGURE XVIIb.

FIGURE XVIIa. This eighteen-year-old girl had her entire lower abdomen and thighs severely burned when a baby. She was referred to me by her attending physician with the request that the tension over the abdomen be relieved. Since she was contemplating marriage, he feared trouble if she were to become pregnant.

FIGURE XVIIb. A complete cicatricial web existed from the umbilicus to the middle of the thighs, and it was only after considerable pre-operative planning that a series of Zeth flaps was designed to relieve the distortion.

FIGURE XVIIc. Comparison with the first photograph will show a four-inch upward raise to normal in the position of the umbilicus, which is indicative of the amount of the abdominal tension relieved by interposition of small skin flaps across the lines of tension.



FIGURE XVIIc.



FIGURE XVIII. Traumatic ectropion is of common occurrence. Many complicated procedures for its repair have been advocated. Complete freedom of the lid line, by adequate dissection, is first necessary for reconstruction. A thin full thickness graft from behind the ear is the method of choice for covering the exposed area.



FIGURE XVIIIb. After suturing the lids together, the graft is held in place by a small dental roll, anchored by silk threads to the edges of the graft and the raw lid edges. It is left in place for seven days, and on its removal the above result is seen. There is complete relief from the constant lachrymation which existed with the ectropion.

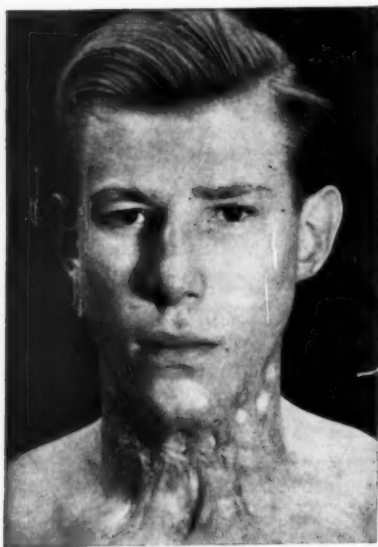


FIGURE XIXa. One of the most difficult repairs is that of neck contractures. This eighteen-year-old youth was burned ten years previously. The chest and back were so scarred as to render hazardous the use of flaps or tubes from the surrounding areas.



FIGURE XIXb. The inability to raise the head freely and the limited sideways motion led me to insert first thin Esser inlay grafts across the lines of tension, to stimulate recovery of the neck muscles. This was aided by vigorous physiotherapy after the grafts had healed in place.

technique of full-thickness nipple transplants for cosmetic purposes, followed by the reconstruction of an acceptably formed smaller breast from the emptied shell of breast tissue and skin.

MALIGNANT DISEASE.

One of the great hopes of persuading the patient to undergo early removal of facial malignant disease lies in the ability of the surgeon to assure the patient of an acceptable reconstruction of the involved part (Figures XIIA,

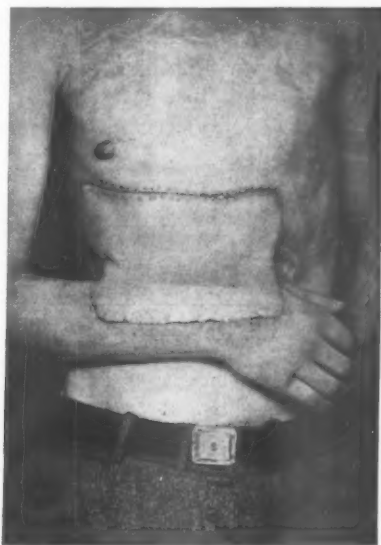


FIGURE XIXc. In the meantime measurements of the neck area involved were found to demand a flap, ten by fourteen inches, allowing for 15% contraction. The abdominal skin being the nearest available, such a flap was lifted and attached to the reflected forearm skin.



FIGURE XIXd. Three weeks later the flap from the abdomen was completely transferred to the forearm as a longitudinal tube flap, partially lined with forearm skin. The abdominal defect was covered by thin skin grafts from the legs.

XIIb and XIIC). The fact that many patients allow their malignant condition to progress until their condition is hopeless, rather than bear mutilation from removal of the growth, is a direct challenge to the reparative surgeon.

BURNS.

An appreciable percentage of the problems of all surgeons is the treatment of burns and their sequelæ. Their importance, once life has been saved, depends upon the area involved. Necessary to life are the hands (Figures XIIIa and XIIIb), which are, perhaps, more easily reconstructed in early life; after that future training can be controlled. In later life variations from the commonly accepted technique of reconstruction may be necessary (Figures XIVA, XIVb and XIVc).

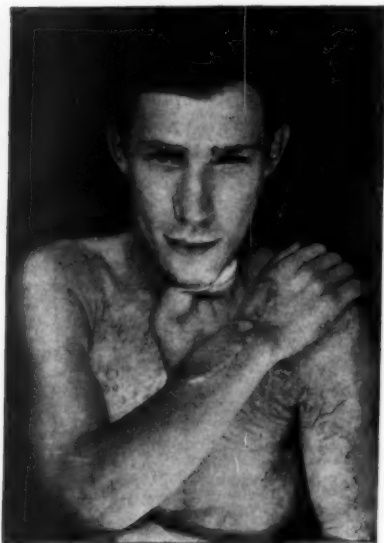


FIGURE XIXe.



FIGURE XIXf.

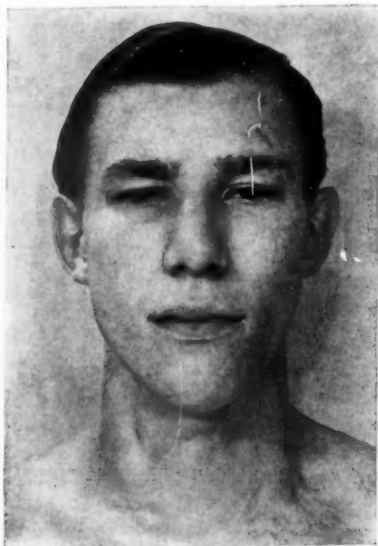


FIGURE XIXg.

FIGURE XIXe. After several weeks the flap was attached to the chin. The raw area of the opened part of the flap not attached was lined with the reflected chin scar tissue, which gave additional stability. Stockinet bandages and adhesive tape were sufficient for support of the arm.

FIGURE XIXf. A month's wait ensured sufficient blood supply to nourish the flap, which was then smoothed out and used to replace all of the involved neck tissue. The forearm flap was returned to the arm, leaving a linear scar.

FIGURE XIXg. Repair of neck contractures, by free grafts, thick or thin, is difficult on account of the necessity of applying sufficient pressure and the tendency of the free grafts to shrink or to become discoloured. Pedicle tubes are valuable, but difficult to produce in such large measurements.



FIGURE XXA.



FIGURE XXB.

FIGURE XXA. The subject of repair of neck contractures is sufficiently important to call attention to the possibility of utilization of the skin of the neck in repair of the chin and mouth. This young aviator suffered bad burns of his face and arms, resulting in a severe keloidal involvement of the chin and mouth.

FIGURE XXB. The eyelids were opened and preliminary thin grafts applied, to allow access for the treatment of corneal ulcerations. A flap from the neck was used as a tunnel-flap under the left cheek, to reconstruct partially the left half of the upper lip. Later, the skin of the entire anterior aspect of the neck was elevated over the chin and right half of the upper lip, to replace the keloidal tissue.

FIGURE XXC. The neck defect was repaired by thin grafts sewn in place and held by four thicknesses of parresine mesh, also sewn into the underlying tissue through the graft. Some tentative repair has been made on the nose and eyelids pending further reconstruction.



FIGURE XXC.



FIGURE XXIA.



FIGURE XXIB.



FIGURE XXIC.

FIGURE XXIA. This sixteen-year-old girl was burned five years previously by battery acid dripping on her face as she lay, with a fractured skull, under a wrecked automobile. She was referred for reconstruction of the eyelids because of severe pain from corneal ulcerations.

FIGURE XXIB. During the eyelid repair the necessity for tube flap implantation over the nasal arch, to relieve scar tension, became evident. The tube was planned also to reconstruct the left ala and upper lip. The ear was released from the head and thin skin grafted so as to aid the patient in wearing glasses.

FIGURE XXIC. The tube is planted over the nasal arch for three weeks, and will be partially returned to the lip. The adhesion retarding the left lower portion of the mouth has a tunnel graft of full thickness skin, implanted underneath the scar.



FIGURE XXId.



FIGURE XXIE.

FIGURE XXId. The left ala repair is accomplished by fixation of the tube to the defect for two weeks. Thyroid medication has proved of distinct worth in controlling the keloid tendencies and stimulating the growth of hair.

FIGURE XXIE. The eyebrows are full thickness skin grafts, taken from the scalp seven weeks previously. The inner canthus of each eye has been prepared for a canthectomy by the use of Esser inlays.

FIGURE XXIF. The tube has been spread out on the upper lip and the tunnel graft on the left lower portion of the mouth smoothed out. Some twenty operative stages, over a period of several years, have restored the function of the eyelids, nose and mouth. The patient, with the aid of ordinary street make-up applied by herself, is now working as a medical artist. Further scar elimination is in progress.



FIGURE XXIF.


The machine age of today furnishes many instances of serious external leg injuries caused by gasoline burns (Figures XVa and XVb), resulting in subsequent contractions and marked functional impairment (Figures XVIa and XVIb). The upward spread of the flames may involve the abdominal skin in such a way as to present unique problems in reconstruction, not ordinarily touched in routine papers (Figures XVIIa, XVIIb and XVIIc).

FACIAL BURNS.

The most important burns are those of the face. Defects surrounding the eyes (Figures XVIIIa and XVIIIb) are especially demanding in their repair. Contractures of the neck (Figures XIXa, XIXb, XIXc, XIXd, XIXe, XIXf and XIXg) present serious major surgical demands for their reconstruction, and require all the ingenuity at the surgeon's command. Sometimes the skin of the neck is spared, and may then be utilized in repair of the mouth and chin (Figures XXa, XXb and XXc). Seldom is the face so involved (Figures XXIa, XXIb, XXIc, XXId, XXIe and XXIf) to the extent that a repair *in toto* is necessary. In cases of this type, as in all problems of reparative surgery, the mental attitude of the patient must be considered as needing support and possibly special training, if the end-result is to be worth while to both patient and surgeon. The true valuation of the worth of reparative surgery is often found in the grateful expression in the patient's eyes. Here, however, reparative surgery does not differ materially from any other branch of medicine.

SUMMARY.

Reparative surgery has advanced into so many fields as to play a part in practically every specialty. Its scope is not limited when the operator is able to exercise sufficient pre-operative meditation, coupled with skilful and gentle handling of the tissues involved. This formula should bring acceptable results.



THE HAMBLIN-DALLOS CONTACT LENS.¹

By A. JAMES FLYNN,
Sydney.

THE Hamblin-Dallos contact lens was devised by Josef Dallos, of Budapest. In April, 1937, there was established in London the Contact Lens Centre, where Dallos has since supervised the making of the lens. It is a thin shell

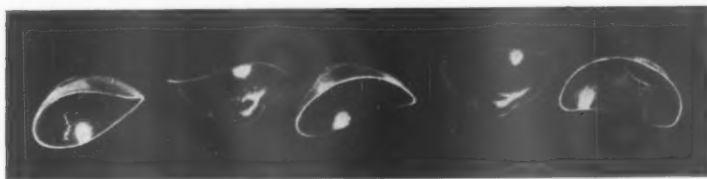


FIGURE I. A few individually fitting contact lenses.

of optical glass, worn underneath the eyelids, moulded to fit the surface of the eyeball and ground to correct the vision of the wearer (Figures I and II).

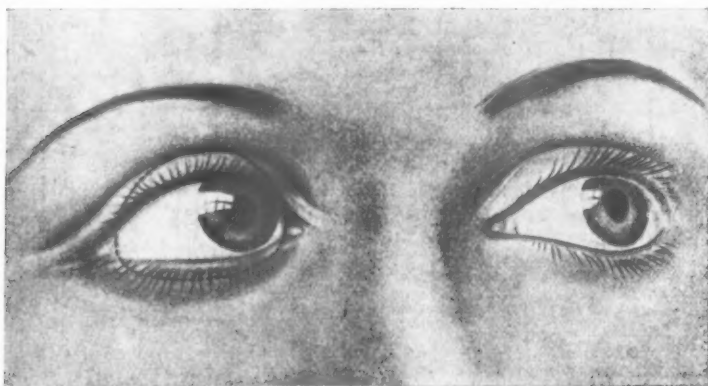


FIGURE II. Dotted line indicates edge of the contact lens.

As eyes vary in shape and size, each contact lens must be formed so that its inner surface accurately fits that portion of the eye on which it is to rest.

¹ Read at the annual meeting of the Royal Australasian College of Surgeons, March, 1938.
Accepted for publication on December 8, 1938.

CHARACTERISTIC FEATURES.

The characteristic features of the Hamblin-Dallos lens are:

1. A wide area of contact with uniform pressure on the bulbar conjunctiva. One disadvantage of some types of contact lens is that they usually touch at only the following four places;

(a) two semilunar areas on the conjunctiva at the edge of the glass, and (b) two small areas at the limbus in the opposite meridian (Figure III). This applies even to the best possible fit. If, however, the lens is flatter, it may rest more on the limbus and is then extremely painful (Figure IV). On the other hand, if the lens is more curved, the edge, and the edge only, rests on the conjunctiva and may cut into it and causes œdema of the conjunctiva and of the cornea (Figure V).



FIGURE III.

2. An absence of sharp edges, eliminating (a) pressure on the limbus, (b) pressure on the bulbar conjunctiva by the periphery of the contact lens. It is essential that there be no ridge



FIGURE IV.



FIGURE V.

at the junction of the corneal and scleral segments of the lens and that its edges be slightly everted.

3. A shaping of the inner surface of the corneal segment, so that while being parallel with the surface of the cornea, it just avoids contact with it. Thus there is formed a capillary space of 0.1 millimetre between the two. Contact should be made, however, at the centre of the cornea if the lens is pressed upon externally or if the lids are forcibly closed. A disadvantage of

some types of contact lens is that they may lie in contact with the cornea and exercise a suction action upon it.

4. An accurate moulding to the surface of the bulbar conjunctiva so as to allow for: (a) scleral astigmatism, (b) conjunctival irregularities, such as



FIGURE VI. Hypermetropic eye with correcting afocal contact glass illustrating convex fluid lens.



FIGURE VII. Myopic eye with correcting afocal contact glass illustrating concave fluid lens.

pinguecula, (c) the increasing compressibility of the episcleral tissues as one passes from the limbus towards the periphery.

5. The provision of means whereby an accurate correction can be ground on the outer surface of the central portion of the contact glass. This central portion need only be an area corresponding in size to the pupil. In some types of contact lens the glass itself is afocal, so that its refracting effect depends upon the formation of a fluid lens between the inner surface of its corneal segment and the cornea. According as the curvature of this surface is greater or less than that of the cornea, the fluid lens produced is either convex (Figure VI) or concave (Figure VII). In the Dallos lens the inner surface of the corneal segment is parallel with the cornea and the correction is ground on the outer surface (Figures VIII and IX).

6. Resistance of the glass of which the lens is made to erosion by the lachrymal fluid, so that the surface next to the eye never gets rough. Of course the external surface is affected by dust and grit in the air, and therefore should be repolished at intervals varying with the environment of the individual patient. It is usually necessary every six months to two years.



FIGURE VIII. Hypermetropic eye with correcting Dallos contact lens with convex correction on anterior surface.



FIGURE IX. Myopic eye with correcting Dallos contact lens with concave correction on anterior surface.

MOULDS OR IMPRESSIONS.

In order to ensure an accurately fitting glass an impression of the eye is taken with a preparation called "Negacoll". From this impression first a wax, next a plaster, then a metal and finally a glass cast are made.

Technique.—"Negacoll", a water-soluble jelly, is heated over a Bunsen burner until it just will not drop from a stirrer and the bubbles in it become larger and less transparent. It is then kept at this temperature on a water bath. Meanwhile the patient is placed in the recumbent position. The eye is anaesthetized with 5% cocaine solution, and the spot for the patient to fix

is determined by finding what position the unaffected eye must assume in order to allow the eye from which the impression is being taken, to take up its primary position. The "Negacoll" is now poured into a stock contact lens and felt with a finger to remove bubbles and to estimate the temperature and consistency. When it is about body temperature and the consistency of thick porridge, that is, just not quite solid, insert the contact lens with the "Negacoll" in its concavity into the eye, with the patient fixing the desired spot. Wait until the "Negacoll" on the operator's finger has set, that is, about five minutes, and then remove the lens and mould from the eye thus: (a) remove all redundant "Negacoll", (b) pull down the lower lid, (c) tell the patient to look up, (d) prise the lower edge of the mould and shell off the seating with an iris repositor, (e) tell the patient to look down and, as he does so, the mould and shell will be extruded, (f) remove all extraneous "Negacoll" and irrigate the conjunctival sac.

Thus one gets (i) the "Negacoll" negative mould. Unfortunately, "Negacoll", while harmless to the eye, does not retain its shape sufficiently well; therefore it is necessary immediately to make another mould from the "Negacoll" negative in a more stable wax. "Hominit" has proved satisfactory for this purpose, and so (ii) a "Hominit" positive mould is made. The subsequent steps are: (iii) to make a plaster negative, (iv) to make a metal (solder) positive, (v) to make a glass negative.

The glass negative, or primary trial glass shell, is then inserted into the patient's eye and its fitting is checked. Usually it is found necessary to grind away a little of the glass at some area of undue pressure. It is then tested on the patient again, when further grinding may be found necessary. If much grinding is required the lens becomes too thin and another lens has to be made. Details of the fitting are mentioned below. This trial fitting on the patient takes a long time and requires great patience on the part of both oculist and patient. I have seen patients reporting to the Contact Lens Centre in London for a month on end for this checking, and have seen as many as ten shells made before a satisfactory fit has been obtained. The result of this checking on the patient is: (vi) The lens is fitted, but not optically polished. Before the optically polished lens is made, (vii) further "Negacoll" positive and plaster positive moulds are made from (vi) after the insertion of a small metallic disc in the corneal segment. (viii) A new metal positive is made from (vii). (ix) A glass negative is made, its anterior optical surface is ground and its thickness is reduced by 0.1 millimetre. (x) Finally, the outer surface is ground to the curvature necessary to give the required correction. How the correction is arrived at is dealt with subsequently.

INSERTION OF THE LENS FOR FITTING.

1. The eye is rendered insensitive with 5% cocaine solution.
2. A spot of paraffin wax is put on the centre of the anterior surface of the glass, as it is important in the fitting to keep the lens accurately centred. The lower edge of the glass is straight and so indicates the horizontal meridian.
3. Hold the lens between the thumb and the second finger with its long axis towards the patient, index finger resting on the anterior surface of the glass and a short distance above the centre. Employ the fourth finger to hold

down the lower lid and the thumb of the other hand on the centre of the lashes of the upper lid.

4. Direct the patient to look up.

5. Insert the outer edge of the contact lens into the lower conjunctival fornix and press well down.

6. Make the patient look down, push the glass home with the index finger, release the upper lid so that it slides over the upper edge of the glass and allow the latter to rotate through 90° , so that the lower margin comes to the temporal side.

FITTING.

When the lens is fitted attention should be paid to three points: (a) the size of the contact lens, (b) the corneal fit, and (c) the scleral fit. In connexion with the two last mentioned, the terms "resting area" or "rest" or "resting" are used. They may be defined as the position in which the glass cannot be brought nearer to the eyeball by further pressure. The aim is to secure a uniform distribution of pressure over the whole surface of the eyeball; therefore the glass must not rest on circumscribed areas, either in the cornea or at the limbus region or at the margin of the contact lens.

The Size of the Contact Lens.—The edges must not extend into the fornices or the lens will "stand away" from the eye. As there is usually ample room above, little difficulty will be encountered with the upper edge. It should be visible when the patient looks down and the upper lid is gently elevated. The lower edge must not extend within one millimetre of the lower fornix. The medial edge must not approach nearer than one millimetre from the *plica semilunaris*. The lateral edge often causes trouble because the outer canthus may be very shallow, and there is often a band of conjunctiva present which interferes with the lie of the lens. For this reason the glass must stop at least one millimetre short of the outer canthus. If the glass is too large, it should be suitably reduced in size before any further fitting is done. Never attempt the fitting of one eye with a contact lens in the other, because the movements of the first eye may be hindered by the size of the glass in the other, and because the patient has probably been trained not to make full movements with the contact lens *in situ* in order to avoid irritation or the formation of bubbles or the displacement of the optical centre of the lens.

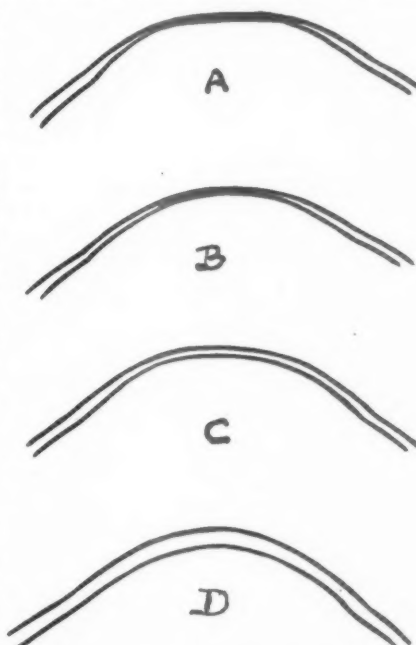


FIGURE X. The four possible types of contact of the lens with the cornea.

The Corneal Fit.—Normally the lens should not touch the cornea. If, however, slight pressure is exerted on the lens, then it should touch in the centre. This is indicated by the lens becoming wet or blurred. There should be no contact at the limbus and a bubble should run freely around on "tilting" the contact glass. This is done by pressure on the edge of the contact glass with an iris repositor. Figure X indicates the four possible types of contact of the lens with the cornea. In A there is pressure, causing deformation, which, of course, is unbearable by the patient. In B actual touch is represented. Actual touch is avoided except in conical cornea. In C capillary touch with 0.1 millimetre separation is shown; this is the correct corneal fit. With a wet glass in a wet eye and separation up to 0.1 to 0.2 millimetre, the glass still remains transparent. In D is illustrated no touch, not even capillary (over three millimetres of separation); this is to be avoided.

The Scleral Fit.—The scleral fit is checked by the following three tests.

1. The behaviour of the conjunctival vessels. (a) If no ischaemia of conjunctiva is produced by pressure on the contact glass, the fitting is too loose. (b) If ischaemia is immediately produced on insertion of the lens and without any pressure, the fitting is too tight. (c) The perfect fit is indicated when blanching is produced on slight pressure. This blanching should not extend out as far as the periphery of the lens or in as far as the limbus. Finer grades of ischaemia can be detected by observation of the vessels to see whether superficial vessels or deep vessels or both are emptied, or whether their natural course is altered, for example, curly vessels become straight *et cetera*.

2. Tilting and drawing the glass away from the eye. Pull the dry glass away from the eye and the conjunctiva will follow it by suction if the subconjunctival tissue is loose. Stroke the conjunctiva away from the edge of the glass towards the fornix with an iris repositor. If it does not respond, the separation between the glass and cornea is less than 0.1 millimetre. Then allow the glass to fall back on the eye, watching carefully for the areas where it first touches. These may have to be ground down. It is important when testing for tilts to apply the pressure on the periphery of glass, for if there is a good fit on one side and on the other only a small resting area, tilting will not occur if the pressure is made on the resting area or on the limbus side of it. Tilting will occur only if the pressure is applied on the peripheral side of the resting area.

3. Observation of how bubbles, escaping from the limbus, slip under the scleral part of the contact glass. Draw the top of the glass away from the eye and slide it to one side to let a little air in. Then let the glass come back to central position, press gently backwards and note along which channels bubbles escape. These indicate where the glass is standing away. Repeat this procedure two or three times to confirm the observations. With a perfectly fitting glass the bubbles escape on the side opposite that at which the pressure is applied. Other features of a perfectly fitting glass are an absence of rotation by itself on movement of the eye and a limitation of slipping to about one millimetre on movement of the eye. This slipping is of course due to the corneal segment of the lens being slightly larger than the cornea on account of its being deepened and having its limbus ridge cut away. Lifting of the edge of the contact glass does not matter as long as

the conjunctiva is sucked up to the internal surface of the glass and the lifted edge does not rub and irritate the overlying lid margins. It is most likely to be annoying at the outer canthus. This lifting of the edge of the glass occurs chiefly when there is a lot of subconjunctival tissue, or in eyes with thick conjunctiva and a flat scleral area.

If in the trial fitting much of the scleral part of the lens has to be ground away, the corneal part will then fit more closely and will therefore need grinding; this produces a sharp ridge at the limbus, which must then be smoothed off. Thus the correction of one area of misfit may produce others, and finally a new trial shell must be made. The minimum thickness of glass used by Dallos is 0.5 millimetre. The maximum is 1.5 millimetres (with a -13 diopter spherical lens ground on this it would be 0.4 millimetre at the centre of the cornea). If the thickness is less than 0.4 millimetre a new glass has to be made. No measurements of the thickness of the glass need be taken except (a) at the centre of the corneal segment or (b) at any place where a lot of grinding has been done.

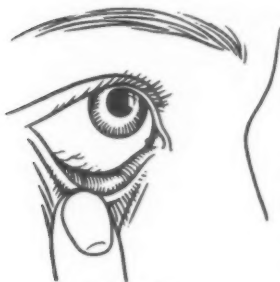


FIGURE XI.

TO ASCERTAIN THE REQUIRED CORRECTION.

As the contact lens is worn about 1.5 centimetres nearer to the eye than a lens in a spectacle frame, the correcting contact glass will differ from the corresponding correcting glass in a spectacle frame; for example, a -20 diopter contact glass is equivalent to a -30 diopter glass in a spectacle frame. It is found that a range extending from +9.0 to -20 diopters is sufficient for a contact lens testing box. They are made on an eight millimetre corneal radius of curvature with a constant scleral radius of curvature. The eye is refracted by the ordinary method, and the appropriate trial

contact lens is inserted. Make a subjective trial with the contact lens in position and with a trial frame on. If the additional lens required in the trial frame is more than one diopter the contact lens is then correspondingly altered. It must be remembered that the value of "0" contact lens of eight millimetres radius of curvature is "0" only if the patient's cornea is also of eight millimetres radius of curvature. Therefore if the patient's corneal radius is not eight millimetres, a calculation has to be made. With a lens of eight millimetres radius of curvature a difference of one millimetre between its radius of curvature and that of the cornea is about five diopters. If the



FIGURE XII.

patient's cornea should be of nine millimetres radius, then an "0" contact lens of eight millimetres radius would give about five diopters of myopia because the space between the cornea and the contact lens then becomes a fluid convex lens. Again, if the patient's cornea has a seven millimetre radius of curvature, then an "0" contact glass of eight millimetres radius of curvature would produce about five diopters of hypermetropia because there is a fluid concave lens.

In arriving at the final correction it is important to remember that the finished lens can be easily flattened, that is, made more *minus*; therefore err on the side of too much *plus*, that is, of over-correcting hypermetropia and under-correcting myopia.

Corneal astigmatism is of course corrected by the contact glass *per se* which replaces any irregularly refracting surface of the cornea by the regular

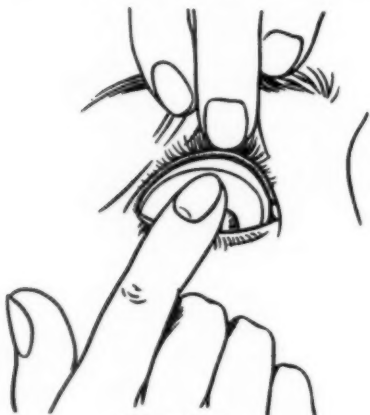


FIGURE XIII.



FIGURE XIV.

surface of the contact lens; therefore only a spherical correction is required in the contact glass.

DIRECTIONS TO THE PATIENT FOR THE INSERTION AND REMOVAL OF THE LENS.

Insertion.—The following directions are given to the patient for the insertion of a lens into the right eye. Hold the lens between the thumb and second finger of the right hand with its outer side pointing towards you. Half fill it with saline solution. Place the first finger on it lightly near the edge. With the first finger of the left hand pull down the right lower lid (Figure XI), and with the right hand insert the outer edge of the glass inside the lower lid while looking upwards (Figure XII). Then release the lower lid and press the glass slightly downwards while looking downwards. Keep looking downwards; release thumb and second finger and with the first finger of the right hand press the glass gently back onto the eye, at the same time turning it towards your nose so that the broadest part now lies on the outer side. With the left hand raise the upper lid from above (Figure XIII), with elbow raised as high as possible, wrist on top of your head, taking care

that the eyelashes are drawn up out of the way and that you are now looking down (Figure XIV). Allow the upper lid to slide down over the glass and wipe away the excess of saline solution. If the glass is not quite comfortable, take it out and put it in again, but do not try to turn it once it has been put in. Be careful that no eyelashes get caught under the edge of the glass. Do not apply eyelash black or mascara until after the lens is in the eye. The lens should be put in by touch alone; the use of a mirror is only a hindrance.

Removal.—The following directions are given to the patient for the removal of the lens. Look well down. Lift the upper lid (Figure XV), and place the right thumb on the middle of the glass, and with the right forefinger feel for the upper edge of the glass and catch the edge; with the finger nail (Figure XVI) gently lever the glass downwards and hold it between the first finger and thumb, look up and it slips out.



FIGURE XV.

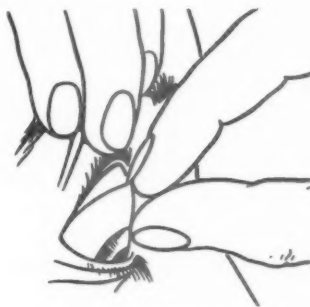


FIGURE XVI.

GENERAL.

At first it is usual to wear the contact lenses only for a few hours, twice a day; and the periods are gradually increased. The patient must avoid rubbing the eyes or squeezing the lids together. Corneal epithelial oedema (Sattler's veil) and a ciliary flush sometimes occur owing to sucking of the cornea by the contact glass. This may go away if the patient persists in wearing the glass. Sometimes removal of the glass and refitting it will take it away. Dallos has seen no permanent ill effects from it. Watering of the eye in sensitive people may take two months or more to disappear. The patient does not require any instrument or anæsthetic to put the lenses in or to remove them. Of course, they are always removed when he goes to bed. With the contact lens in, the eye is less exposed to injury than when ordinary spectacles are worn. Presbyopic patients, while doing close work, wear reading glasses in addition to their contact lens.

INDICATIONS.

The indications for the use of a contact lens are:

1. To correct irregularities of the surface of the cornea, such as (a) keratoconus or (b) faceted scars caused by inflammation or trauma and

producing irregular astigmatism. This is perhaps the strongest indication for the use of a contact lens, because in such cases the irregularly refracting surface of the cornea is replaced by the regular curve of the contact lens, with a resulting improvement in vision far greater than can be achieved by any other means.

2. To restore single binocular vision: (a) in cases of unioocular aphakia and (b) in the presence of a high degree of anisometropia. A contact lens does not alter the size of the retinal image as does a strong lens in a spectacle frame.

3. To correct high degrees of ametropia, especially high myopic astigmatism. Patients whose high myopia is corrected with contact lens are usually able to read about two lines further down a Snellen test type than they are able to read with their best correction in a spectacle frame. Contact lenses also give such patients a larger field of vision than ordinary spectacles. Patients with binocular aphakia corrected by a contact lens find that their sense of disorientation, associated with lenses of high power in a spectacle frame, is abolished owing to the return of the apparent size of objects to normal; they also find that they lose the peripheral distortion caused by lenses of high power in spectacles.

4. For people whose vision can be perfectly corrected by spectacles, but (a) whose occupation makes the wearing of spectacles undesirable—for example, captains *et cetera* of small boats, where spray blurs spectacles, but blinking keeps their contact lens clear; for actors and actresses; for racing car drivers; for skiing enthusiasts *et cetera*—(b) who object to spectacles purely on the ground of their appearance. Many in this category lose their enthusiasm for contact lenses after the novelty has worn off.

5. Not to improve the vision, but purely for cosmetic purposes. For example, if a patient has good visual acuity in one eye and an unsightly total leucoma in the other, a contact glass can be made for the latter eye and be painted on the inside surface to match the good eye with a cosmetic result far superior to any tattooing operation.

6. As a therapeutic measure. It has been found that contact lenses benefit the nutrition of the cornea in cases of recurrent ulceration associated with keratitis from mustard gas, certain other corneal dystrophies, pemphigus *et cetera*.

COMMENT.

One hopes that some medium more suitable than "Negacoll" will be found to facilitate the making of the mould. The desiderata of such a substance are: (a) that it shall be harmless to the eye, (b) that it shall set quickly, (c) that it shall retain its shape. Actually Dallos now has collected such an extensive range of trial fitting lenses at the Contact Lens Centre that he finds it unnecessary in many instances to take impressions, but instead uses the best "near fit" as the primary trial shell for the fitting process. But this "short cut" is not yet practicable in Australia. At the present time these lenses are made exclusively by Theodore Hamblin Limited, London. Therefore the Australian oculist takes the cast, sends it to London, receives back the primary trial shell, does the fitting and returns it to London as often as some alteration is required. As six such alterations in fitting may be taken as the average number required, this necessitates six postings to

London and return; so if we use air mail it is at least six months before the patient receives the final contact glass.

Price.—From what has gone before it is obvious that the making and fitting of the Hamblin-Dallos contact lens are elaborate and laborious, and therefore the cost is necessarily high. The cost to hospital patients in Sydney may be of interest. The price per lens varies according to the power of the correcting ordinary lens. If the correcting lens is under 10.0 diopters, the price is £7 10s. (Australian currency); if it is over 10.0 diopters, the price is £12 10s. (Australian currency). This price does not include any fee for the ophthalmologist; it is the amount that has to be paid for one lens for a hospital patient. The charge includes the cost of making trial shells for each fitting, and Theodore Hamblin Limited has placed no limit up to the present on the number of trial shells that may be required before the final fit is perfected. One or two or ten trial shells may be required. The postage under present air mail registered rates is two shillings and fourpence from Australia and one shilling from London, that is, three shillings and fourpence return; and assuming six such return posts as the average number required, postage adds another £1 to the price given above. Repolishing the lens costs £1 5s. (Australian currency). These notes invite thought for the future of the procedure in Australia.

ACKNOWLEDGEMENT.

My grateful acknowledgement is due to Miss Ida Mann, F.R.C.S., for her having introduced me to the Contact Lens Centre in London and for much valued help.

SAFER SURGERY IN DOUBTFUL OPERATIVE RISKS.¹

By T. E. VICTOR HURLEY,
Melbourne.

A PATIENT classed as a doubtful or a bad operative risk has been defined as one whose prospects of recovery from active surgical treatment of his condition fall much below the average. We all tend to be creatures of habit or custom and to follow a more or less fixed routine, irrespective of the variations met with in different patients with widely differing diseases; but I hope to indicate some means by which patients may be steered more safely and comfortably through their operations by a judicious variation of our methods to meet special circumstances.

We are informed by actuarial authorities that within the last few decades the average expectancy of life has increased by several years; and the benefits of surgery are now sought by many elderly patients and doubtful risks to whom operation would formerly have been denied.

In urgent cases the surgeon may have to take the conditions as he finds them and be able to influence the result for good or ill chiefly by the judgement or skill of the operation, as, for example, in a case of strangulated hernia. In non-urgent conditions, however, such as prostatic enlargement or toxic goitre, the management of the case before and after operation may convert an otherwise doubtful risk into one of reasonable safety.

In much of our surgical work there is a large margin of safety, and we can rely on the patient's natural recuperative powers to make up for faulty surgical technique or judgement, which in a doubtful risk may make the difference between success and disaster.

"Safety first" is the motto, and when the surgeon acting on such a principle has mapped out the safest course of action, he should not allow himself to be deflected from it by the importunities of others, not even by the patient.

One of my respected seniors advised me many years ago never to operate on an unwilling patient, and I have often had reason to appreciate the wisdom of this advice. The house surgeon who tries to persuade an unwilling or apprehensive patient to undergo operation must regretfully be discouraged. The surgeon can approach his task with much greater confidence in the ultimate result if he knows that he has the trust of the patient who has the will to live, and who actively cooperates. Apart from its influence on the surgical result, if the unwilling or non-cooperating patient makes an uneventful recovery, this is often thought by him to be no more than should be expected, while if events turn out badly, his friends and relatives do not refrain from making their dissatisfaction widely known.

¹ Accepted for publication on March 11, 1938. An address delivered at a Tasmanian meeting of the Royal Australasian College of Surgeons.

THE USE OF SEDATIVES.

Patients of an equable temperament will face a surgical ordeal with no further preliminary preparation than a frank explanation of as much of the position as they should know, and of what it is proposed should be done. In others of a more nervous type, the emotional strain may be largely overcome by the judicious use of sedatives or basal anaesthetics beforehand. The introduction of "twilight sleep" some years ago in obstetric work was the first systematic attempt to achieve this by the use of "Omnopon" and scopolamine. This method is often used in surgical work, especially in operations under local anaesthesia, and has been well described by Corlette and others. A large number of barbiturate compounds have since been introduced, for example, "Amytal", "Nembutal", "Hebaral sodium" *et cetera*, and are usually given orally, the intravenous route, except for "Evipan sodium", being rather dangerous. Paraldehyde and "Avertin" are given rectally, and are very useful, and if given in correct doses in accordance with the instructions laid down, are safe and satisfactory. The dose of paraldehyde should not exceed six drachms for women and eight drachms for men, and may be made up either with olive oil or with water. The solution of "Avertin" takes longer to prepare, and the details must be strictly carried out in accordance with the charts supplied by the makers. It is wise not to exceed a dose of 0.09 cubic centimetre per kilogram of body weight.

RESPIRATORY COMPLICATIONS.

Patients in whom basal anaesthetics have been used require careful supervision after operation, and should not be left unattended until they are able to respond to questions. Respiratory complications are rather more liable to occur after their use, probably because the lowered activity of the respiratory centre leads to diminished respiratory movement and lessened aeration of the bases of the lungs. Areas of collapse of lung tissue are rendered more liable, and these readily pave the way for bronchopneumonia.

The use of "Carbogen", 5% to 10%, after operation at hourly or two-hourly intervals helps to counteract this by stimulating the amplitude and rate of the respiratory movements. Physiologists assure us that the use of a tent enclosing the head is the most effective method of administration, but it has the disadvantage that semi-conscious patients often are alarmed by the apparatus, so that one usually employs tubing and funnel held close to the face, or a small rubber catheter passed down the nose, and connected to the cylinder via a Wolff's bottle through which the rate of flow of the gas can be seen and regulated. This leads us to a consideration of measures designed to lessen the incidence of post-operative chest infections which play so large a part in the morbidity and mortality of doubtful risks, particularly in the elderly. One does not of course carry out an operation of convenience in a patient recently recovered from an acute respiratory infection or tonsillitis. Also after operation the patient is encouraged to expectorate from his air passages any mucus which, if allowed to remain, may cause areas of lung collapse and subsequent infection. Free respiratory movements should not be restricted, and light dressings over the wound, held in place by adhesive strapping, should as soon as possible replace the more usual tightly encircling binder. From the commencement patients should be assured that they can, and should, make any movements which do not cause pain.

Their muscular tone and circulation are thereby assisted, and the complications of thrombosis and embolism are made less likely. Bankoff has claimed that three injections of atropine (one one-hundredth of a grain) and ephedrine (one-quarter of a grain), one on each of the first, third and fifth days after operation, will prevent the formation of these vascular clots which are justly feared because of their insidiousness and occasional tragic results.

CHOICE OF AN ANÆSTHETIC.

Operation during or soon after respiratory infections, undue exposure of the patient and loss of heat either during operation or on his way to and from the theatre, cyanosis and excess of mucus, unnecessarily prolonged or faulty operative technique, are usually more potent causes of post-operative chest troubles than the particular anæsthetic used. Of the inhalation anæsthetics ether has come in for more than its fair share of blame, and the records of most hospitals show that operations under spinal and local anæsthesia are followed by at least as great an incidence of post-operative chest infections as are those performed with inhalation anæsthetics. Spinal and local methods are, however, more frequently used in the worst risks. Nitrous oxide must be cautiously used when the blood pressure is raised, because it usually raises the blood pressure still further by twenty millimetres or more. Spinal anæsthesia, however, produces a fall of twenty to fifty millimetres, which may be counteracted to a certain extent by the use of ephedrine or by the intravenous injection of concentrated glucose saline solution.

Anæsthetic agents or drugs produce the desired result of narcosis by acting on the cerebral cells, but also affect in lesser degree the medullary centres, which maintain the vital processes of respiration *et cetera*. They also affect other delicate and important tissue cells such as heart, liver and kidney, with which they are brought in contact by way of the circulation.

Chloroform is the most potent in its action on tissue cells, but it still has a field of usefulness, particularly in elderly people with chronic chest conditions, or when cautery or diathermy is to be used.

Ether is much less toxic than chloroform and in small doses is a stimulant. In desperate cases many patients can be more safely operated on under well given ether anæsthesia than any other. Soon after operation, however, the patient's condition tends to slump with a fall of blood pressure, and this is most pronounced in patients overdosed with ether or in whom the operation has been unduly prolonged.

Gas anæsthetics, such as nitrous oxide and ethylene, unlike ether and chloroform, do not enter into any firm combination with the tissue cells, and are therefore readily excreted with a minimum of toxic action. They are of especial value in cases of diabetes, toxic goitre, prostatic enlargement with renal damage *et cetera*. If they are used in difficult abdominal cases additional relaxation may be necessary and can be obtained by the additional use of local or spinal anæsthesia. The use of a gas anæsthetic does not of necessity make a desperate case a safe anæsthetic risk, and requires special apparatus and training. Well given light ether anæsthesia is safer than a badly given gas anæsthetic. Nitrous oxide is not advisable in fat, plethoric or alcoholic subjects.

DEPTH OF ANÆSTHESIA.

The duration and depth of anæsthesia are important if the patient's condition during and after operation is to be maintained. Both the surgeon and the anæsthetist have their responsibilities in this regard. The anæsthetist should endeavour to keep the patient of a good colour and free from mucus, and he should grade the depth of anæsthesia to the requirements in abdominal cases, for example, the greatest relaxation being needed during the initial exploration, when access is desired to deeply situated structures, and in closure of the peritoneum. Unnecessary depth of anæsthesia with overdose of the drug is followed by lowered blood pressure, increased post-operative vomiting and distension, and other sequelæ. The surgeon should not expect the additional relaxation of unduly deep anæsthesia to counteract defective technique. The amount of ether used by the open method should not usually exceed the rate of five or six ounces per hour.

Rough handling of tissues and forcible retraction add their quota of shock-producing impulses with increased muscular rigidity, and the surgeon should give the anæsthetist timely warning if he is about to do anything likely to interrupt the smooth progress of the anæsthetic, such as palpating a common bile duct, stretching the anal sphincter *et cetera*.

PRELIMINARY REST IN HOSPITAL.

In non-urgent cases, preliminary rest and observation beforehand are beneficial to allow the patient to get settled down to his surroundings. Most anæsthetics affect carbohydrate metabolism in greater or less degree, and with operation the fluid reserves of the body are drawn on. Fluids and readily assimilable carbohydrates, glucose *et cetera*, are therefore freely supplied before operation, and post-operative acidosis and vomiting thereby lessened. Purgation and strenuous enemata are avoided and the patient's usual bowel routine is allowed to continue as far as possible, with the addition usually of a small enema on the night before operation.

TIME OF OPERATION.

There are distinct advantages for patient, surgeon and staff if operations are performed in the mornings as early as is convenient. The patient, after a good night's sleep, possibly with the aid of a mild hypnotic, is then in better condition than later in the day, when the surgeon and staff also may have lost their earlier freshness. Also the time of greatest anxiety for the surgeon is most often during the first few hours after operation, and if restorative measures or further assistance should be urgently required, for example, transfusion, intravenous injections, special drugs *et cetera*, these are more readily obtainable during the usual working hours rather than in the early hours of the morning.

ADMINISTRATION OF FLUIDS.

In the treatment of dehydrated patients, or of those in whom shock is expected after operation, the administration of fluids by subcutaneous injection while the operation is in progress is of great value. If reactions are to be avoided, freshly prepared solutions made up with distilled water are essential. Either normal saline or Ringer's solution may be used and

dextrose may also be added, the latter in a concentration of not more than 5%. More concentrated solutions may be used for intravenous administration, but I have a preference for the subcutaneous route whenever possible. Patients can be supplied with amounts of fluid up to three or four pints per day subcutaneously for several days, as, for example, in a case of duodenal fistula in which this was successfully done for a week. If the rate of flow is regulated slowly, there is no undue discomfort, especially if a small quantity of local anæsthetic is added. Scrupulous antiseptic precautions are of course necessary.

Rectal administration of fluids may also be used, but this method cannot be relied on to meet more than a small proportion of the fluid requirements of the body, and it is very doubtful if the glucose usually added is really absorbed into circulation. It has not, so far as I know, been possible to demonstrate any increase in the blood sugar after rectal administration.

Blood transfusion is a most powerful aid in cases of anæmia or when much blood is lost during or after operation, that is, in patients whose hæmoglobin value or blood volume is so much reduced that adequate oxygenation of the tissues cannot be carried on. Because of its spectacular and emotional appeal, there is a tendency for it to be used in unsuitable cases. It is not a general reviver for moribund patients and is not without risks. It is safer and therefore desirable to carry out direct testing between donor and recipient when possible. This takes longer than the older method of "group" testing, in which the blood group of an individual is found by testing against known Group II and Group III serum, and a donor is selected who is either of the same blood group as the recipient or a Group IV (universal donor). One must affirm, however, that the use of the latter method in a large number of soldiers under war conditions was not followed by the number of untoward reactions which recent researches indicate as probable.

SPECIAL CONDITIONS.

I have selected for consideration the special preparation employed in the following three conditions: diabetes, obstructive jaundice and prostatic enlargement.

Diabetes.

Many years ago Treves said: "Diabetes offers a serious bar to any kind of operation—a wound in a diabetic patient will probably not heal well and the tissues appear to offer a most favourable medium for putrefactive and pyogenic bacteria." Fortunately, the dangers of surgical operations have been greatly reduced in recent years by the introduction of more accurate biochemical methods—by the discovery of insulin and by the greater control we now have over carbohydrate metabolism, by glucose administration, accurate dieting *et cetera*. In the surgical treatment of diabetic patients the cooperation of a physician with the surgeon is desirable.

In elderly long-standing diabetics the tissues often function best at the blood sugar level higher than normal to which they have long been accustomed. Coma due to acidosis or ketosis is the chief danger, is responsible for 60% of the deaths, and is usually precipitated by some complicating infection. It seems that ketosis is due to incomplete metabolism of fats, for whose proper metabolism an adequate supply and utilization of carbohydrates and

fluids are necessary. Before operation, therefore, in non-urgent cases, the patient should have a liberal supply of carbohydrates and fluids, ensuring a store of glycogen as a safeguard against ketosis. It is advisable to increase the carbohydrate intake up to 100 to 150 grammes daily, covering this with sufficient insulin to control the glycosuria, which is relatively unimportant so long as carbohydrate metabolism is sufficient to prevent ketone body formation. It is sugar which protects the diabetic in surgery, and insulin only makes the sugar utilizable. The pre-operative preparation of a diabetic for a non-urgent operation should not usually take longer than four to seven days.

If glycosuria is discovered in a patient requiring urgent operation, or if a diabetic develops an urgent surgical condition, operation should not be postponed. Time will usually permit of a blood sugar estimation, and if the diagnosis of diabetes is confirmed, the patient should be given a proper amount of insulin; a usual amount would be twenty to thirty units with forty to fifty grammes of carbohydrate, glucose being the most convenient. If diacetic acid or acetone is found in the urine, the amounts of insulin and carbohydrate are increased, acting on the principle that a temporary glycosuria is of little significance, but acidosis is to be avoided at all costs. Fluids are given freely, and if vomiting is present or the administration of fluids by mouth is not advisable on surgical grounds, rectal, subcutaneous or intravenous glucose saline injections must be given. The addition of saline solution is helpful to replace the chloride lost by vomiting.

Anæsthetics.—Anæsthetics interfere to a certain extent with the function of the tissue cells and also cause a rise in the blood sugar value. This is most marked with chloroform, less with ether and least of all with nitrous oxide and ethylene. Local anæsthetics have least effect in this way, but are not advisable in septic conditions. Spinal anæsthesia has a definite place in these cases, but is not devoid of risks. "Avertin" has been largely used in some clinics. For most cases I prefer nitrous oxide and oxygen, supplemented when necessary by local or spinal anæsthesia or a minimum of ether.

Diabetic Gangrene.—In patients with diabetic gangrene, arteriosclerosis is always marked; the diabetes does not cause the gangrene and is itself made worse by it. In amputation, tourniquets should not be used because of the risk of damage to the arteriosclerotic arteries and also to the tissues, especially at the site where they are applied. Digital control of the main vessels by an assistant and the securing of these by ligature before their division should be used. Generally speaking, it may be said that with efficient medical treatment of the diabetic factor amputations can be carried out more conservatively than formerly, the actual site of amputation being determined by estimating the degree of impairment of the circulation beforehand.

Post-operative treatment is conducted on similar lines to the pre-operative and regular urine testing, and, when necessary, blood sugar estimations are carried out.

Urine Testing.—If Benedict's method of testing the urine is used, the dosage of insulin may be determined by the colour change of the reagent, which is roughly proportional to the amount of sugar in the urine; for example, if the colour turns orange fifteen units of insulin are given, if the colour turns yellow ten units of insulin are given, if the colour turns

green five units of insulin are given, if the colour turns blue no insulin is given. In most cases a larger amount of insulin will be required after operation than before. It is also wise, when the patient's urine is sugar free, to give glucose or orange juice in additions of ten grammes more to the prescribed diet to keep pace with the increasing carbohydrate tolerance and to prevent hypoglycæmia or acidosis. The nurses should know the signs of hypoglycæmia and be prepared to give sugar or orange juice by mouth or one cubic centimetre of pituitrin or 1 in 1,000 adrenaline subcutaneously.

Chronic Biliary Obstruction.

Operations upon the common bile duct carry a much greater risk than those on the gall-bladder, and it is not possible, as it is in the urinary tract, to provide preliminary drainage by some simple procedure so as to improve the patient's condition. Also, the loss of bile from the body by external drainage is not well tolerated and the various bile replacement preparations do not seem very effective. We also lack accurate methods of estimating liver function. It has to be remembered that 20% to 25% of cases of stone in the common bile duct are not associated with jaundice, and these may be just as doubtful risks as those in which jaundice is present, especially if the bile pigment formation is affected. In operations on the common bile duct, after any stones in it have been removed, graduated urethral sounds or Hegar's dilators are passed into the duodenum via the ampulla. The incision in the duct is sutured and reliance is usually placed on internal drainage of the bile by the natural route with conservation of the bile. A drainage tube is placed down to the region of the sutured duct and led out of the wound. I feel sure that the routine opening and exploration of the common bile duct, advised by some as part of operations on the gall-bladder, is unsound. While it is admitted that an occasional small stone in the lower end of the duct may be missed by external palpation, such a stone can also easily be missed if the duct is opened; and the increased risk incurred in doubtful risks by unnecessarily opening the duct more than offsets the slight advantage likely to be gained by the discovery of an otherwise undetected stone. The sounder and safer practice is to open the common bile duct only when the clinical history or the findings by inspection and palpation at operation indicate the definite probability of a stone being present. It is, of course, advisable to remove the gall-bladder, but this should not be undertaken in a doubtful case if it is likely to be difficult.

Before and after operation fluids and carbohydrate should be given freely; calcium injections either as calcium chloride or calcium gluconate are helpful; subcutaneous injection of dextrose saline solution with an appropriate amount of insulin is valuable, and may be continued while the operation is in progress. A blood transfusion should be readily available in case it is needed; it is the best remedy for the persistent bleeding sometimes encountered after operation.

Prostatic Enlargement with Urinary Obstruction.

In patients with prostatic enlargement and urinary obstruction the extent of renal damage and the other ill effects, particularly on the cardiovascular system, are more or less proportional to the degree and duration of the urinary obstruction, or, in other words, to the degree of incompleteness

with which the bladder empties itself. Patients can usefully be graded according to the amount of residual urine.

1. Residual urine up to four ounces—partial retention.
2. Residual urine between four and ten ounces—incomplete retention.
3. Chronic retention with distended bladder:
 - (a) Residual urine greater than ten ounces.
 - (b) Retention with overflow.
 - (c) Acute complete retention.

These patients with chronic retention require most careful management. It is remarkable how insidiously retention with overflow often develops. Patients often present themselves with a history of frequency of micturition in which four to six ounces may be passed at a time, and yet on examination a distended bladder extending up to the umbilicus is found. The patient has been only skimming the top off the contents of the bladder, which may have been full for weeks past without pain. These cases are particularly dangerous, as they indicate long-standing urinary obstruction with much renal damage.

Renal Efficiency Tests.—In dealing with the urinary tract, we possess several methods of estimating with reasonable accuracy the degree of renal efficiency; for example, blood urea estimation, the urea concentration test, dye tests, excretion pyelography *et cetera*. While these are of great value, they must be used in conjunction with the general clinical observations, such as the daily output of urine and its specific gravity and appearance, the state of the cardio-vascular system, obesity, clean tongue *et cetera*.

Bladder Drainage.—Drainage of the bladder in these cases of chronic retention is the most effective method available to improve renal efficiency. It may be done by catheter via the urethra or suprapubically. The relative indications for these two methods is still debatable. The passage of a catheter, preferably a rubber one of the Tiemann type with a small round tip and a Coudé curve, will generally be the first and readiest means attempted. Slow emptying or decompression of the bladder over a day or two is advisable, and this is easier via the urethra than suprapubically. After the catheter is inserted it is fitted with a sterile cork and dressing which are removed every two hours, permitting the escape of eight to ten ounces each time. When the bladder is nearly empty it is better to connect up the catheter by tubing to a bottle containing an antiseptic solution. Two objections to catheter drainage are the greater risk of infection and the discomfort of an irritative urethritis and possible subsequent epididymitis associated with the continued presence of the catheter in the urethra. With strict antiseptic precautions, however, many patients can be safely steered by urethral drainage to prostatectomy after ten to fourteen days. It is also sound to perform bilateral ligature or division of the *vas deferens* to forestall epididymitis, especially when infection is present.

Suprapubic Drainage.—In other cases, after the initial retention has been relieved, suprapubic drainage may be substituted with advantage. It is more comfortable, less liable to result in infection, allows the patient more freedom, and if done, as it is usually is, with a water-tight self-retaining catheter of the de Pezzer type, the patient may be allowed to get up with the catheter in place. The suprapubic route is also preferable if cystitis is present, if the prostate bleeds readily, or if the urethra is intolerant of a catheter. Suprapubic drainage also causes the prostate to recede in size and its

vascularity is lessened, thus reducing the operative risk of the subsequent prostatectomy. In infected cases it also allows the vulnerable prevesical area to become sealed off and protected before the prostatectomy.


The induration of tissues, however, at the second operation of the two-stage procedure makes open prostatectomy of the Thomson Walker or Harris type more difficult or even impossible, as the prostatic cavity cannot be readily exposed to view. But in many patients, particularly those with chronic bronchitis or those who are very fat, the additional time required for an open operation in the Trendelenburg position carries a greater risk than a rapidly carried out two-stage prostatectomy in which free drainage is provided, and hæmostasis is obtained when necessary by light gauze packing or by the use of a Pilcher bag.

Permanent Bladder Drainage.—In patients in whom malignant disease of the prostate is diagnosed or in those who do not improve sufficiently after drainage to make prostatectomy possible, water-tight suprapubic drainage can be carried out indefinitely with reasonable comfort by the use of a de Pezzer or other similar tube.

An elderly diabetic of eighty-four years treated in this way has been able to conduct his business and play golf two or three times a week for the last eighteen months, his tube being changed every six to eight weeks.

It has also been my experience that no further appreciable benefit of the renal function or general condition is obtained after drainage has been in operation for a month or six weeks; if the patient is not then judged fit for operation, he probably never will be.

Often in the past surgeons eminent in their day expressed the opinion that the limit had been reached in what could be accomplished by surgery. It is nevertheless true that with increasing knowledge and by the use of new methods the benefits of surgery are now being received by many who only a few years ago would have been rejected because the hazard was too great. We can anticipate with confidence that in the future surgery will still further extend its benefits to many who by our present standards and methods are beyond our aid.



SLIPPED UPPER FEMORAL EPIPHYSIS, WITH A REPORT ON A CASE TREATED BY SKELETAL TRACTION.¹

By E. E. DUNLOP,
Melbourne.

SLIPPED upper femoral epiphysis is a condition which arouses considerable interest. This is shown by the rapidly accumulating literature devoted to the subject in recent years, and by the controversial nature of opinions expressed regarding its aetiology and treatment. Early references to the condition were made by Müller and Whitman; Kocher⁽¹⁾ and Hofmeister⁽²⁾ in 1894 introduced the term adolescent *coxa vara*. Elmslie⁽³⁾ in 1907 made a comprehensive review of the whole subject of *coxa vara* and devoted much attention to the type seen in adolescents. Most recent writers refer to the condition as slipped upper femoral epiphysis.

ÆTIOLOGY.

The lesion is notably one of early adolescence, and the age incidence is largely between ten and seventeen years. In this connexion stress has been laid on certain anatomical factors. The upper age limit is of course determined by commencing fusion of the head of the bone with the shaft; the lower is more difficult to explain. Walmsley⁽⁴⁾ drew attention to the fact that at the age of ten years the epiphyseal line lies more vertically. Irwin⁽⁵⁾ pointed out that prior to this age the cartilage of the head was partially continuous with that of the greater trochanter. Key⁽⁶⁾ in 1926 and Badgeley⁽⁷⁾ in 1929 drew attention to the thinning of the periosteum about the neck during adolescence, thus depriving the epiphysis of support.

Boys are affected more often than girls, and this fact has been attributed by many writers to the more vigorous activity of the former sex predisposing to strain and injury in the epiphyseal region.

The importance of trauma has been emphasized by almost all writers on the subject. Key,⁽⁶⁾ Wardle,⁽⁸⁾ Macausland,⁽⁹⁾ Brogden⁽¹⁰⁾ and others would suggest that in approximately half the cases there is a history of significant trauma. Sprengel in 1898 made the original observation that slight trauma could give rise to displacement of the epiphysis. Elmslie⁽³⁾ records that the violence causing the lesion may be slight, and that multiple small traumata may operate. He refers to the higher incidence amongst patients of the working class engaged in rough work. Curiously, as pointed out by Brogden, the condition would appear to be considerably more common in the left hip than in the right.

If we apply the facile hypothesis of Leriche and Policard, it seems feasible that mild traumata to the juxta-epiphyseal region may in some cases

¹ Accepted for publication on May 24, 1938.

determine hyperæmic states leading to absorption and rarefaction of bone. There may thus be a close parallelism between this condition and a large group of conditions to which we may collectively refer as post-traumatic rarefying osteitis. King⁽¹¹⁾ and other writers refer to this hypothesis.

It seems probable, however, that several factors operate. Many patients (see the accompanying case report) deny having received any injury. Again both hips are affected in a surprising number of cases, estimated by Mercer⁽¹²⁾ to be about one in 60. This would favour suggestions either that purely static forces come into play, that is, that there is a disproportion between the weight of the child and the strength of the bone in the juxta-epiphyseal region, or alternatively that there is some constitutional or organic factor causing weakness at this point. Many views have been advanced as to possible organic disease exerting such an influence. Froelich even postulated the presence of an attenuated infection in the epiphyseal region. Other early writers suggested adolescent rickets, and Kocher, a localized osteomalacia of the neck of the femur. Wardle⁽⁸⁾ described two cases with generalized epiphyseal changes, evident on X-ray examination, and other findings consistent with renal rickets. Much attention has been given to endocrine disorders, and particularly to pituitary dysfunction. In a large percentage of cases there is some degree of pathological adiposity and sexual infantilism corresponding to Fröhlich's syndrome. Kienbock suggested the term "juvenile hypophyseal malacia of the neck of the femur". Endocrine disorders may exert an effect both by weakening of the bony skeleton and by increase of body weight.

To sum up, it seems certain that multiple causal factors may operate, that trauma is a factor of importance, even though the violence may be small, and that organic disease factors may predispose to the lesion by determining imperfect bone formation or excessive rarefaction in the epiphyseal region.

CASE REPORT.

The records of the Children's Hospital, Melbourne, show that four patients with slipped upper femoral epiphysis were treated at that institution during the last five years. The usual method of treatment adopted has been manipulation under general anaesthesia and application of a plaster hip spica. Continuous traction methods, and in particular skeletal traction methods, do not appear to have received much attention in this country. The excellent results which may follow skeletal traction are illustrated by the following case report.

J.F., aged thirteen and a half years, was admitted to the Children's Hospital, Melbourne, complaining of progressive pain and disability in the left hip joint of three weeks' duration. He had previously played football and other games, but could not recall having received any injury. For the last week he had been confined to bed, and any movement involving the left hip joint caused great pain. His previous health had been excellent, and his family history was satisfactory.

A rather plump boy with under-developed genitalia, he was afebrile and healthy in appearance, and general examination revealed no abnormality. The left hip, however, exhibited definite deformity with external rotation and 18 millimetres (three-quarters of an inch) of shortening of the limb was present. The base of Bryant's triangle was shortened, and the greater trochanter was obviously elevated. All movements were very painful.

The diagnosis of slipped upper left femoral epiphysis was verified by X rays, which revealed a complete epiphyseal separation with the classical displacement of the

epiphysis downwards, backwards and medially, partially out of the acetabulum, and the neck of the femur rotated outward and displaced upwards and forwards. The right hip joint was normal in appearance, and X ray examination of the radial epiphyses and knee joints did not reveal any other abnormality in the epiphyseal region. The skull and pituitary fossa presented a normal X ray appearance. The blood did not react to the Wassermann test. The blood calcium content was 11.8 milligrammes per 100 cubic centimetres, the phosphorus content was 3.5 milligrammes *per centum*.

The patient was placed on a fracture bed, the legs were abducted each about 30°, supported on Thomas splints, and extension was applied. Skeletal traction was employed on the affected side by means of a Kirschner wire inserted through the tibial tuberosity,



FIGURE 1. X ray photograph of left hip joint in a patient aged thirteen and a half years, exhibiting complete separation of the left upper femoral epiphysis.

a weight of 11.25 kilograms (twenty-five pounds) being used. Strong internal rotation was maintained throughout by means of a pull of 0.7 kilogram (one and a half pounds) on the lateral side of the horseshoe. Skin traction was employed on the opposite side, and counter traction was exerted by raising the foot of the bed. In two days X ray examination showed that reduction was complete, and weights were reduced to 5.4 kilograms (twelve pounds). After six weeks' traction with the limb internally rotated, a plaster hip spica was applied to maintain the position, the foot being included in the plaster. Control skiagrams were taken. Two months following the patient's admission to hospital he was allowed to walk in plaster with the aid of crutches, a walking iron and a patten on the right boot. Crutches were soon discarded. After a further two months the plaster was removed and cautious weight bearing was commenced. X ray examination still revealed excellent position. There were now a little rarefaction present and slight irregularity of the medial and juxta-epiphyseal region of the neck.

Nine months after his admission to hospital the patient was carrying out full normal activities without a limp.

There was a full range of painless movement, and shortening was rather less than six millimetres (a quarter of an inch). Rarefaction and other changes previously present in the neck were now much less pronounced. The accompanying illustrations show the very satisfactory reduction of deformity and the ultimate freedom of movement in the hip. Considerable genital development occurred during the period of observation.

DISCUSSION.

The treatment of slipped upper femoral epiphysis presents many difficulties, and is often fraught with failure in the reduction of deformity resulting in considerable limitation of movement. Stiff and painful joints are



FIGURE II. X ray photograph taken three days after that in Figure I. Reduction has been effected by the use of skeletal traction applied to the left tibia.

common, and severe osteoarthritis is a frequent legacy. In the making of a prognosis it must not be overlooked that there is some possibility that the opposite hip may become affected.

It is possible to recognize a pre-slipping stage with a characteristic X ray picture, as described by Brailsford.⁽¹³⁾ Such patients require adequate relief of weight-bearing until consolidation occurs. Perkins⁽¹⁴⁾ claims that it is essential to recognize cases of two types, which he terms those with incomplete slipping and those with rapid complete slipping. His dictum is that "it is not possible by manipulation to reduce an incomplete displacement". Accordingly he recommends in such cases relief of weight bearing until consolidation occurs, and then if the *coxa vara* deformity warrants it, osteotomy of the femur. It would, however, seem desirable in all cases to attempt to reduce

the deformity, provided that the method employed did not inflict further damage upon the already afflicted hip joint.

When definite separation has occurred the following groups merit consideration: (i) early cases of acute separation; (ii) cases of some weeks' or months' standing, but with an obvious line of demarcation between the head and neck; (iii) cases in young adults in which healing with deformity has occurred; (iv) remote cases with severe osteoarthritis.

The discussion regarding treatment will be confined almost entirely to the first group. The accepted methods of treatment of the early case of acute



FIGURE III. X ray photograph of both hip joints six months after commencement of treatment. There is a little irregularity and rarefaction present in the medial and juxta-epiphyseal region of the neck. This change is rapidly becoming less evident. The position of fragments remains good.

separation may be classified as follows: (a) non-operative or closed reduction —(i) manipulative methods (Whitman, Jahss), (ii) continuous traction methods; (b) operative methods or open reduction.

It is a point of practical importance to determine how long a case may be regarded as belonging to the first group, or, in other words, how long after slipping has occurred it is still possible to effect reduction by closed methods. X ray appearances are of importance in this connexion. Böhler,⁽¹⁵⁾ following the dictum of Mau, considers that if the displacement of the epiphysis is more than four weeks old, it is not possible to replace it. Ellis,⁽¹⁶⁾ on the other hand, using skeletal traction, claimed a reduction in all cases in which the history of pain was of less than six weeks' duration, and Brogden⁽¹⁰⁾ states that reduction is possible up to four months.

The orthodox method of treatment in the early acute case has long been along the lines of manipulation by the well-known Whitman technique, followed by the application of plaster. The results in many cases have been unsatisfactory, this leading Wilson⁽¹⁷⁾ in 1924 to recommend open reduction.

Key⁽⁶⁾ in 1926 emphasized strongly the disappointing results by advancing the opinion that the results in cases reviewed by him were on the whole better when no treatment was adopted than they were when treatment by manipulation was used.

Jahss⁽¹⁸⁾ in 1931 introduced an important modification of the Whitman technique. He stressed a difference in the displacement of fragments after

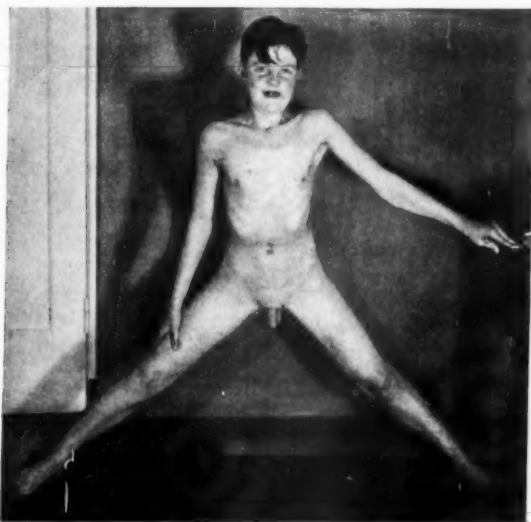


FIGURE IV. Photograph of patient illustrating the freedom of movement and absence of deformity nine months from the date of admission.

epiphyseal separation as opposed to the appearances after fractures of the neck of the femur. He considers that in the former the epiphysis is usually displaced downwards, backwards and medially, the neck of the femur upward, outward and forward, whilst in the latter, though the proximal fragment is practically unaltered in position, the distal fragment is displaced upwards, outwards and backwards. His manipulation consists of traction applied in a position of abduction and internal rotation, but flexion at the hip joint instead of extension, as applied in Whitman's method. He claimed greatly improved results.

Wardle⁽⁸⁾ in 1933 strongly advocated continuous traction as opposed to manipulative methods, and described a method whereby traction was applied with strapping to the legs in an adducted and internally rotated position. He strongly criticized manipulation on the grounds that it forced the

projecting edge of the neck of the bone against the surface of the head, thus driving it downwards and backwards and damaging the articular cartilage and soft joint structures. Steady traction in the adducted position was said to eliminate this damage.

Perkins⁽¹⁴⁾ in 1932 recorded success, using skeletal traction by means of a Kirschner wire or Steinmann's pin inserted through the tibia or femur of



FIGURE V. Photograph of patient illustrating the freedom of movement and absence of deformity nine months from the date of admission.



FIGURE VI. Photograph of patient illustrating the freedom of movement and absence of deformity nine months from the date of admission.

the affected leg. It may be noted that traction applied to a single leg involves some degree of abduction of the limb relative to the pelvis.

Ellis⁽¹⁶⁾ in 1935 employed a method of skeletal traction differing only in detail from that outlined in the above case report. The wire was inserted through the lower end of the femur. He suggested the maintenance of extension for seven weeks, then a short period of active movements in bed followed by the use of a weight-bearing caliper for six months. He also condemned manipulative methods, but disagreed with Wardle's principle regarding traction in adduction, and pointed out that abduction served to

bring the fractured surfaces into parallel relationship. His recorded results appear to be extremely good.

Wilson⁽¹⁷⁾ was the first strong protagonist of operative measures of reduction. He claimed that his results showed a considerable improvement upon manipulative measures. Nevertheless, he records that flexion in all cases was limited to at least 90°, and in one case to 45°, and that in most cases shortening was 1.25 centimetres (half an inch) or more. It is evident that skeletal traction methods can give more satisfactory results than these.

It would appear that in the treatment of an early case of slipped epiphysis, whereas the Jahss modification of Whitman's technique is an improvement, there is considerable opinion favouring continuous traction methods, and in particular methods of skeletal traction. Open reduction has at least a place in the treatment of cases in which methods of closed reduction fail.

The above case report illustrates that in certain cases at least very good results may be obtained by a method of skeletal traction. In this connexion a minor point is made regarding the ease of maintenance of a state of internal rotation of the limb by control of the horseshoe carrying the traction wire.

SUMMARY.

1. A report is presented of a case of slipped upper femoral epiphysis successfully treated by skeletal traction.
2. Some opinions as to the aetiology of the condition are reviewed.
3. Methods of treatment in the early acute case are briefly outlined and discussed.

ACKNOWLEDGEMENTS.

My thanks are due to Dr. H. Douglas Stephens for permission to publish the records of a patient treated under his supervision during my period of service as a house surgeon at the Children's Hospital, Melbourne; also to Dr. E. S. J. King, of Melbourne, for helpful suggestions in preparing this paper.

REFERENCES.

- (1) Kocher: "Ueber Coxa Vara, eine Berufskrankheit der Wachstumsperiode", *Deutsche Zeitschrift für Chirurgie*, 1893-1894, Volume xxxviii, page 521.
- (2) F. Hofmeister: "Coxa Vara; eine typische Form der Schenkelhalsverbiegung", *Beiträge zur klinischen Chirurgie*, Volume xli, 1894, page 245.
- (3) R. C. Elmslie: "Injury and Deformity of the Epiphysis of the Head of the Femur. Coxa Vara", *The Lancet*, Volume i, 1907, page 410.
- (4) T. Walmsley: "The Epiphysis of the Head of the Femur", *The Journal of Anatomy and Physiology*, Volume xlix, 1915, page 434.
- (5) S. T. Irwin: "Separation of the Upper Epiphysis of the Femur", *The Irish Journal of Medical Science*, 1929, page 71.
- (6) J. A. Key: "Epiphyseal Coxa Vara, or Displacement of the Capital Epiphysis of the Femur in Adolescence", *The Journal of Bone and Joint Surgery*, Volume xxiv, 1926, page 95.
- (7) C. E. Badgeley: "Displacement of the Upper Femoral Epiphysis", *The Journal of the American Medical Association*, Volume xcii, 1929, page 355.
- (8) E. N. Wardle: "Aetiology and Treatment of Slipped Epiphysis of the Head of the Femur", *The British Journal of Surgery*, Volume xli, 1933, page 313.
- (9) A. R. Maccausland: "Separation of the Capital Femoral Epiphysis", *The Journal of Bone and Joint Surgery*, Volume xvii, 1935, page 353.

⁽¹⁰⁾ W. E. Brogden: "Review of the End Results of Fifty-Seven Cases of Slipped Upper Femoral Epiphysis", *The Journal of Bone and Joint Surgery*, Volume xvii, 1935, page 179.

⁽¹¹⁾ E. S. J. King: "Localized Rarefying Conditions of Bone", page 344.

⁽¹²⁾ W. Mercer: "Orthopædic Surgery", page 447.

⁽¹³⁾ J. F. Brailsford: "The Radiology of Bones and Joints", page 178.


⁽¹⁴⁾ G. Perkins: "Treatment of Adolescent Coxa Vara", *The British Medical Journal*, Volume i, 1932, page 55.

⁽¹⁵⁾ L. Böhler: "The Treatment of Fractures", page 331.

⁽¹⁶⁾ V. H. Ellis: "Adolescent Coxa Vara", *The Lancet*, Volume i, 1935, page 1440.

⁽¹⁷⁾ P. D. Wilson: "Displacement of Upper Epiphysis of Femur Treated by Open Reduction", *The Journal of the American Medical Association*, Volume lxxiii, 1924, page 1749.

⁽¹⁸⁾ S. A. Jahss: "Displacement of the Upper Epiphysis of the Femur (Adolescent Coxa Vara), Treated by Closed Reduction", *The Journal of Bone and Joint Surgery*, Volume xiii, 1931, page 856.



FISTULA AND SINUS OF THE BLADDER.¹

By REGINALD BRIDGE,
Sydney.

SINUS and fistula formation in the body generally represents an extensive and serious surgical problem; this is no less in the particular sphere of the bladder and urethra. Those of us who specialize in diseases of the urinary organs frequently encounter patients who have endured months or years of suffering through lack of appreciation of the difficulties involved.

I think this problem can best be met by a cursory discussion of the subject rather than by one along the lines of academic classification and treatment.

SUPRAPUBIC FISTULA.

Let us begin with a common and worrying form of fistula, namely, the suprapubic fistula.

Surgical Suprapubic Fistula.

After a suprapubic cystotomy for any reason, for example, prostatectomy, removal of stone, acute retention of urine *et cetera*, one is often confronted with delayed healing either in the form of a persistently discharging sinus or a frank urinary fistula. Now let me say at the outset that, in the absence of sepsis—that is, infection and breaking down of the incision, and this is very rare nowadays—a suprapubic opening should be firmly healed after removal of the drainage tube in a matter of a few weeks, say, three to four. If this does not occur promptly, or if the wound, once healed, breaks down again, some factor is probably at work which may perpetuate the condition for an indefinite period. It is quite unjustifiable to allow such a condition to go on indefinitely for months, in the hope that things will right themselves. This may sound gratuitous advice, but I can assure you that we often enough see surgical suprapubic fistulae going on for months or even years, when a proper appreciation of the problems involved can cure them promptly.

In an approach to these cases two fundamentals have to be considered: (a) Is there any obstruction to the urinary outflow? (b) Is there any local condition in the wound to prevent healing? Take the first problem. It is a general surgical principle throughout the body that obstruction in any form in a conducting channel will maintain any existing fistula above the obstruction for an indefinite period. You all know that a fistula of the common bile duct or gall-bladder will be maintained indefinitely if there is a stone or stricture or some other obstruction in the common duct below, and the first essential to the closure of such a sinus is to remove the

¹ Accepted for publication on May 12, 1938.

obstruction. Moreover, you know that if Nature, despite this, closes such a sinus herself, then the pathological state that originally preceded it will continue, for example, a recurrence of biliary obstruction *et cetera*. Now in the treatment of a suprapubic fistula the first essential is to determine the presence or absence of obstruction at the bladder outlet. This point must be emphasized most strongly. The detection of such an obstruction may be a matter of simple clinical examination or, on the other hand, may require the greatest acumen and diagnostic skill and judgement. Let me illustrate with a few examples. After removal of the prostate gland, in a proportion of patients, there occurs a contracture or occlusion of the cavity from which the gland has been removed. This may take a number of forms, such as a tight fibrous ring in the position of the so-called internal sphincter, or adhesions between the walls of the cavity. If, therefore, any delay occurs in the healing of the wound, the passage of a large sound will usually reveal such an obstruction, and if the adhesions have not yet gone on to the formation of dense scar tissue, they can be broken down. This simple expedient can cure quite a number of fistulae; and if a large catheter is then tied in the urethra, the suprapubic wound will promptly heal. If great difficulty is met in the introduction of a sound, or if it cannot be introduced at all there obviously lies the cause of the fistula. Nothing is gained by delay, and the obstruction must be removed or the fistula will not heal. Should Nature in such a case close the fistula (after much effort and delay), the patient will be left with all the signs of bladder-neck obstruction. Usually the fistula closes only to break open again, and so on for an indefinite period. Moreover, serious urinary extravasation may occur, as I will show later. Bladder-neck obstructions, however, cannot always be detected by a simple clinical examination. *Per rectum* the prostate gland may feel quite normal and a curved sound or catheter may be introduced into the bladder without obvious difficulty, and yet the patient may have bladder-neck obstruction sufficient to prevent a suprapubic wound from healing. Such cases can be diagnosed only by a careful cysto-urethroscopic examination. This is not a lecture on bladder-neck obstructions, so I shall merely mention a few of the conditions found.

1. Inadequate removal of the prostatic lobes. This may be so gross as to lead to the finding of a complete lateral lobe left unremoved. It is hard to believe that anyone who elects to perform prostatectomy should do this. A commoner error is to remove the lateral lobes, but to fail to recognize and remove a subtrigonal lobe. A subtrigonal lobe, which at operation is a small unobtrusive affair and which may to the inexperienced appear of no moment compared to the mass of lateral lobar tissue removed, will most effectively occlude the urethral opening later on when the prostatic cavity has contracted. Moreover, such a lobe will progressively enlarge, so that, if not at first, it will later on produce a complete occlusion. Therefore it is most essential that all thickening or definite rounded masses should be dissected away from the trigonal area of the bladder neck after removal of lateral lobes.

2. Secondary contracture of the bladder neck until the internal sphincter area becomes a small fibrous ring. I have seen one so contracted as only to take a probe.

3. Fibrous adhesions between the lateral walls of the prostatic cavity forming a diaphragm as it were. I should like briefly to give the history of two recent cases which illustrate the perpetuation of a suprapubic fistula from unrecognized bladder-neck obstruction.

N.B. was first seen with "retention with overflow". The bladder was distended to the umbilicus, and the urinary stream was reduced to a trickle. Fever was present, with loss of weight and pyuria. The history was that of a fall from a horse and injury to the urethra twenty years before, with a gradually decreasing urinary stream since. Matters had got worse recently, and the present condition had existed for about six weeks.

Examination revealed an impassable stricture of the urethra near the bladder neck. Suprapubic cystotomy was done as an emergency operation under local anaesthesia.

After a period of drainage the patient regained robust health. Under an anaesthetic the opening in the stricture was found and the stricture was given continuous graduated dilatation with indwelling catheters. The suprapubic tube was removed and the suprapubic wound promptly healed. At the end of about fourteen days the stricture was so dilated that a 13/16 sound could easily be passed and the catheter was left out. The patient could not pass his urine and the bladder had to be catheterized. Examination revealed a well dilated stricture and *per rectum* the prostate was within normal size and there was no lesion of the nervous system. Again the patient could not pass urine, the bladder became distended and the suprapubic wound burst open. The indwelling catheter was replaced and the wound again promptly healed. In such a case it was quite useless to go on waiting and hoping, because very obviously there was some obstructive phenomenon in the urinary outflow other than the stricture. Cystoscopy revealed a well developed posterior "ball valve" lobe and two small intra-urethral lobes. These were enucleated by the suprapubic route. The patient is now free of trouble.

More complex still is the case of C.G. In this man a whole series of disasters, grave ill health, loss of time and great expense were all the outcome of ill-advised surgery. And yet the case was really a simple urologic problem and could have been met quite easily and promptly if the proper methods had been adopted at the beginning. The history in brief is as follows.

The patient developed some "frequency", pain and pyuria and consulted a surgeon. After a period of bladder irrigations with no improvement, an X ray examination revealed a stone in the bladder about the size of an olive. This was removed by suprapubic cystotomy. The patient was in hospital four months because the wound would not heal. Eventually it did heal and the man returned to his work. He still had difficulty and discomfort on passing urine. After a few weeks the wound became swollen and tender and the patient developed fever. He was at sea without medical attention. At this stage he came under my care. He was gravely ill with a prevesical abscess discharging through his old suprapubic wound. This was opened widely and an indwelling catheter was tied into the bladder. After several weeks his wound had healed and his urine became clear and his general health was sound. Examination *per rectum* at this stage revealed a prostate gland of quite normal proportions and a catheter could be passed without obvious difficulty into the bladder. However, cysto-urethroscopic examination revealed well developed sclerosis of the bladder neck, so-called "collar formation", and especially well developed posteriorly, so-called "bar formation". Here lay the obvious cause of the trouble. All obstructing tissue was removed by the Braasch Bumpus resectoscope. After this the patient could pass urine quite freely and returned to work. He was very pleased. However, after a few weeks his suprapubic wound became inflamed and burst open, with the escape of pus and then urine. Again it healed and again discharged. This happened at regular intervals.

The wound was curetted and packed and apparently made to heal from the bottom, but again it burst open, forming a urinary fistula. The problem now resolved itself into two fundamental considerations. In the first place, had enough tissue been removed from the bladder neck by the resection? Grave responsibility depended on the answer to this question, because if obstruction was still present, the wound would never heal; whereas if further resection were performed in the mistaken belief that here lay the trouble, too much might be removed, with the possibility of resulting incontinence. A further cysto-urethroscopic examination convinced me that he had a quite adequate

clearance of the bladder neck. The second consideration was whether the fistula was perpetuated by some local condition in the scar. X ray examination revealed no foreign body nor any osteomyelitis of the pubic bone. The possible presence of a piece of buried silkworm gut was thought of. Eventually it was decided to excise the whole scar and to resuture the bladder and abdominal wall. This was done. No foreign body was found, merely dense scar tissue with outlying pockets of pus. The wound healed promptly and has not opened since. The patient, however, as might be expected, developed an incisional hernia and has great difficulty in controlling it by a truss, and may later on have to submit to another operation to repair this hernia. Later this patient, as a result of his prolonged sepsis, developed a calculus which became impacted in his right ureter. At one stage I thought he would develop a surgical kidney. He developed suppression of urine. However, at present he is in very good health and back at his work, but still has pyuria. This will need further investigation.

I have merely given the outlines of this man's long, painful and costly illness, which at one time was a grave menace to his life—all the outcome of failure to recognize in the first place that bladder-neck obstruction was the first and essential cause of all his troubles. The stone was merely an incident, and should not have been removed by cystotomy. Litholapaxy and bladder-neck resection were all that was required. I have little doubt that if in the first place this had been done, this man would have been cured after a few weeks' stay in hospital.

Incidentally, I might mention here that failure of a suprapubic incision to heal is more common than is generally supposed. Surgeons do not like to admit their failures. We urologists see quite a number of cases in consultation, and I could give the case histories of many others with varying pathological change of great interest. I have often been impressed with the fact that many middle aged men hesitate, on being advised to have a prostatectomy, not on account of the fear of death, or fear of the operation or anæsthetic, but on account of fear that their "wound won't heal".

The history of this second case leads me now to a discussion of other causes of suprapubic urinary fistulæ, namely, some intrinsic pathological change related to the incision of a scar. Nothing is more aggravating than to find after a cystotomy for any particular cause, for example, after prostatectomy, that everything is well and yet a small discharging sinus or fistula persists. The wound, except for this small sinus, is well healed and the urinary obstruction completely relieved. Such a sinus can persist for an indefinite period and keeps an otherwise active patient in hospital at added expense, or at least under medical supervision. Unless the underlying pathology is recognized, such a sinus may heal apparently quite well, only to flare up and discharge again from time to time. There are a number of local conditions which will cause this:

1. Foreign bodies, for example, buried silkworm gut or knots of catgut.
2. Weak granulations which require curettage.
3. Osteitis of the pubic bone. This is a serious complication and most insidious in its onset and progress; it is difficult to diagnose unless the symptoms and signs are known. In the making of a suprapubic incision great care must be taken not to wound the periosteum of the pubic bone nor to allow a drainage tube to press hardly upon it. If any sepsis is present, and there is invariably sepsis in mild degree, an osteitis or osteomyelitis may be set up. This usually is a low grade condition and does not make its presence felt for some time. A persistent suprapubic sinus may occur. The

patient usually complains of severe boring pain in the perineum, relieved by rest in bed and aggravated by walking about. Examination reveals tenderness of the pubic arch and pain is present at the insertion of the adductors of the thigh on adduction of the legs. X ray examination reveals in time the characteristic appearances of bony erosion with small sequestra. Fortunately the condition is rare. Its very insidious nature and persistence are its chief features. Treatment consists in prolonged rest in bed and gentle removal of any sequestra that may form at the bottom of the sinus.

4. The formation of dense bony tissue or calcification in the suprapubic scar related in some way to osteitis of the pubic bone. I recently had such a case.

Within a few weeks of cystotomy (a preliminary in this case to a two-stage prostatectomy, and done by my house surgeon) dense bony masses had formed in the suprapubic scar and had to be excised widely. They did not recur. A pathological report described them as true bone.

Maybe the condition was one of *myositis ossificans* occurring in the fibres of the *rectus abdominis* or pyramidalis muscles. I have seen them before, and other observers have described this condition as *myositis ossificans*.

5. Low incision with adhesion to pubic bone.

Traumatic Suprapubic Fistulae.

I should now like to say something of sinuses and fistulae of the bladder and urethra related to trauma. These are usually associated with or a result of those formidable crushing injuries of the pelvis that are so frequently seen in public hospitals. It may be stated as a fundamental principle that, as soon as the general condition of the patient will allow, a proper survey of the bladder and urethra should be made. An injury to the bladder or urethra, not recognized and promptly dealt with, may of itself cause a life of invalidism. In addition the extravasation of urine which is likely to occur, may lead to sepsis and death or osteomyelitis of the broken bones, with years of suffering and sinus formation. No rule can be made for all these cases. They must be dealt with on their merits. But after a fractured pelvis or any blow or crushing injury, retention of urine or hæmorrhage from the urethra calls for a complete and prompt survey and treatment. A catheter should be passed into the bladder. If it passes easily, it should be tied and kept there with drainage over the side of the bed. In this way extravasation of urine through what is presumably a partial tear of the urethra will be prevented. House surgeons think, because the patient can pass urine despite the passage of blood from the urethra, or because a catheter passes easily, that all will be well. In the course of several days they find that all is not well and the patient has deep-seated urinary extravasation. This then becomes a formidable surgical problem. Here is the brief history of such a case.

A boundary rider was thrown from his horse and kicked on the pubic bone. The pubic bone was fractured. He was taken to hospital. There was blood from the urethra. He developed retention. A catheter was passed and the bladder was emptied. The catheter was not left in the urethra, but the doctor, realizing possibly that some treatment was necessary, passed sounds every third day. Five days after the accident the patient was ill with pelvic pain and fever. He became progressively worse, and at the end of several weeks an abscess pointed in the left ischio-rectal fossa. A small incision was made into this, and a large quantity of pus escaped, followed by urine.

Ever after the patient passed most of his urine through this fistula. He arrived from the country in a pitiable condition, emaciated to skin and bone, bed-ridden and yellow from septic anemia, and with a continuous high temperature. He had a large metal catheter tied into the bladder which caused great pain. This was removed and replaced by a rubber catheter with great relief. The fistulous opening was incised widely and explored with the finger. There was a huge abscess cavity filling the left half of the pelvis. This was drained with a large tube. There was considerable difficulty in guiding the catheter on subsequent occasions into the bladder. The rubber catheter preferred to traverse a tear deep in the urethra and to enter the pelvic abscess cavity. No small measure of patience and manipulation was necessary to guide it into the bladder along the urethra. Fortunately it is not necessary to change an indwelling catheter often; with careful antiseptic douching, once in five to seven days is sufficient. Eventually this patient recovered and is now in good health. He still has pyuria, but is so "nervous" from his past experience that he refuses further investigation.

It seems to me that in this case the catheter should have been left in the bladder and the bladder kept continually drained until such time as the urethral tear had healed. That infection would not have spread into his pelvic tissues cannot, I will admit, be positively asserted, but I feel sure that the forcing of urine through the urethral tear was the cause of the trouble.

It would be tiresome to quote more of these cases, since surgeons see these pelvic injuries, the result of industrial and other accidents, commonly enough. The point to be impressed is that the lesions of the bladder and urethra are often far more important than the bone injury.

In some cases a catheter cannot be introduced into the bladder. Such cases are more formidable because they indicate a more extensive tear, if not complete rupture, of the urethra. This may occur at the junction of the urethra and prostate gland. Usually in such cases the concomitant bony injury and severe shock have to be considered, and this precludes any extensive surgery. Suprapubic cystotomy should be promptly performed, under local anesthesia if need be, and the condition dealt with later. If operation is at all feasible, the urethra should be explored and sutured, the site of suture should be adequately drained through the perineum and suprapubically, and cystotomy should be performed; otherwise deep-seated suppuration will ensue. This leads to osteomyelitis of the fractured bones, with months of purulent discharge and sinus formation. As I have said, no rule can be made for all these cases, but the surgeon must at all costs convince himself that the continuity and drainage of the bladder and urethra are established. If this is neglected, a fractured pelvis that from an orthopaedic point of view may be relatively unimportant, becomes a formidable surgical disease.

Vesico-Intestinal Fistulae and Fistulae of the Bladder Connected with the Pelvic Viscera.

Vesico-intestinal fistulae may involve the bladder and any part of the intestinal tube that may come in contact with it; but the rectum and pelvic colon are mostly involved. The initiating lesion is usually in the bowel; but, of course, the process may be reversed and a primary lesion, such as a growth of the bladder, may fungate into the bowel and so set up a fistulous communication. The common bowel conditions that produce fistula are (a) diverticula, (b) foreign bodies, (c) newgrowths. The bowel forms an adhesion to the bladder at the site of the lesion, and if a growth is present direct extension of it through the bladder wall may occur. In cases of diverticulum or foreign body there is usually an intervening inflammatory

mass. This may vary in magnitude, with numerous secondary adhesions to other coils of intestine, omentum *et cetera*. Such a condition has an important bearing on treatment. Sometimes surprisingly little inflammatory tissue intervenes between an inflamed diverticulum and the bladder, in which case direct attack upon it is feasible. In other cases, such a mass of plastic tissue is present that any direct attack is hazardous. Direct communication of the bowel lumen with the bladder may be intermittent or continuous. When the communication is intermittent, pus and bowel contents reach the bladder from an intervening abscess. Symptoms and signs may be: (a) related to the bowel, or (b) related to the bladder.

There may be a history of abdominal colic over a period of time or a recent attack suggestive of an acute appendicitis with fever, abdominal tenderness *et cetera*. On the other hand, the first symptoms and signs may be entirely related to the bladder.

When the symptoms and signs are related to the bladder, the passage of gas and known bowel contents establishes the diagnosis. It must be remembered, however, that a fistulous communication may occur between the bladder and bowel without the obvious passage of bowel contents into the bladder. An inflamed diverticulum forming a peridiverticular abscess may adhere to the bladder and rupture into it. This leads to the discharge of pus and maybe gas, but little known bowel content may pass into the bladder. Such a state of affairs makes the diagnosis more difficult. Diagnosis depends on a careful examination of the urine for known bowel contents (for example, muscle fibres, charcoal granules *et cetera*, given by the mouth), X ray examination of the bowel, and cystoscopic examination.

X Rays.—I do not propose to discuss the X ray diagnosis in detail. When the pathological condition of the bowel is at all advanced, X ray examination, whether the opaque medium is given by enema or by the mouth, is most revealing, and a positive diagnosis of growth *et cetera* may be made. A small fistulous opening between bowel and bladder when there is little change in the bowel lumen may not be revealed by X rays.

Cystoscopic Findings.—To those familiar with the condition the cystoscopic picture of fistulae between the bladder and other abdominal viscera is most striking. In many cases the diagnosis can be made at a glance. The amount of foul, purulent urine out of all proportion to the degree of cystitis present, is an important point. In fact, it is a strange thing that very often cystitis of only a mild degree is present. Often at the beginning the cystitis is intense, but has a tendency to subside. One patient of mine had a fistula between her bladder and colon since childhood, and there was no cystitis. The outstanding cystoscopic finding is a mass not unlike a growth occupying some position usually on the back wall of the bladder; careful inspection will, however, show many points of difference between this infiltration of the bladder wall and a growth. Carcinoma has a homogeneity which the inflammatory mass does not possess. While the latter at parts will have an indurated edge with bulbous oedema *et cetera*, very like a carcinoma, it will at some other part be obviously a diffuse infiltration of the bladder wall. When carcinoma attains any magnitude it has a large sloughing centre. The inflammatory infiltration rarely has this. The sloughing centre is small and often pus may be seen oozing from it like a worm; such a picture is almost pathognomonic. Carcinoma of the bowel may of course present itself

as a direct carcinomatous extension through the bladder wall. In this case diagnosis is not so easy. Biopsy may be necessary. A small piece can be removed by forceps through an operating cystoscope. A mass in the bladder wall then, with pus oozing from a central opening, merely tells you that a bladder fistula is present. Accessory evidence must be acquired to determine which organ is involved.

Abscesses connected with the female genitalia and appendix sometimes rupture into the bladder, forming a fistulous opening. Herewith is the brief history of such a case.

A woman was admitted to hospital with a view to undergoing a hysterectomy for fibroids. While in hospital, she appeared to develop a very acute cystitis. This failed to respond to bladder irrigations *et cetera*. The patient was very irate and accused the nurse of causing her cystitis by allowing "Bonney's blue" to come in contact with the vulva. There was no improvement after several weeks' treatment. When she was seen by me her urine was very purulent and there was great frequency of micturition. Cystoscopy disclosed a mass on the posterior wall of the bladder which at first sight looked like a carcinoma. Careful inspection, however, showed this to be an inflammatory mass with a small central opening from which pus was oozing. A bimanual vaginal examination revealed an inflammatory mass between the bladder and uterus; X ray examination revealed no lesion of the colon. There was a large appendiceal scar with the marks where several drainage tubes had been inserted some years before. The question arose as to whether the appendix had ever been removed; possibly we were dealing with a recurrent appendiceal abscess which had ruptured into the bladder. The patient eventually got quite well.

Abscesses connected with tubal infection also rupture into the bladder. It is obvious therefore that diagnosis must depend on careful examination, quite apart from any cystoscopic evidence. With such a multiplicity of lesions which may form a fistulous communication with the bladder, any description of treatment would be lengthy and tedious and space would not permit it.

VESICO-VAGINAL FISTULÆ.

In conclusion, I should like to speak of some aspects of vesico-vaginal fistulæ. Here again there is enough material for a separate paper, so I shall confine my remarks to some essential points. In a general way one meets vesico-vaginal fistulæ due to three causes: (a) obstetrics, (b) surgery, (c) radium.

In obstetric practice pressure of the foetal head for too long a period of time on the base of the bladder produces an area of ischæmia with subsequent sloughing and tissue loss. This may be of any size from that of a small pin hole to almost complete loss of the bladder base. Fortunately, the area of loss is most often of moderate dimensions and in an accessible area of the bladder. I have, however, seen several cases in which the whole bladder base was absent. The cystoscopic picture in these cases is most bizarre, when one sees the *cervix uteri* and posterior vaginal wall lying in the position of the base of the bladder.

Fistulæ due to surgical interference are produced most commonly during the operation of complete hysterectomy, probably when portion of the bladder is seized with an artery forceps or a stitch. I have seen cases from the practice of the most skilful surgeons, so that it must be remembered that in the performance of complete hysterectomy on no account must any part of the bladder be caught in an artery forceps or a stitch; experienced gynaecological surgeons assure me that in some cases the utmost caution and anatomical knowledge are necessary to avoid doing so. Fistulæ produced


in this way are different from those produced by obstetrics. Firstly, they occur high up in the vault of the vagina instead of far forward near the bladder base. Secondly, the patient is often an elderly person and maybe a *nullipara* with a tight atresic vaginal orifice; this makes such a fistula very difficult to approach from the vagina. Thirdly, no matter how small they are, there is often only a very minute amount of "free" tissue around the orifice with which to work in the effecting of a repair.

These remarks also apply to fistulae produced by radium, with this additional point: that the tissues after a radium burn are no longer normal. There is much fibrosis, with loss of elasticity and poor blood supply. Overdosage of radium applied to carcinoma of the *cervix uteri* not only completely destroys the cervical tissues, but is apt to cause a slough of the bladder wall. These fistulae are tucked up high in the vaginal vault and very inaccessible.

In the performance of an operation on vesico-vaginal fistulae several important facts must be constantly kept in mind: (i) There must be no tension on the suture line; this is a fundamental principle of all plastic surgery. (ii) Accessibility is most important to achieve this. (iii) Asepsis must be good. (iv) Post-operative tension must be avoided. It is to achieve a nice balance of these essentials that determines one whether to approach these fistulae from the vagina or by the suprapubic route.

When there is plenty of "free" tissue around the fistulous opening, the vaginal orifice reasonably wide and the fistula reasonably accessible, the vaginal route is most satisfactory and, in my opinion, the best. When the fistula is high in the vaginal vault with little "free" tissue around it, and when the vaginal orifice is tight, approach from below is very difficult. One should have no hesitation then in operating by the suprapubic transvesical route. It is not possible to give here details of operative technique, but the incision should be generous; spinal anaesthetic gives an excellent relaxation.

Finally, whatever route is chosen, it is most essential that one knows the position of the ureters in relation to the opening and the amount of "free" tissue about it, in order not to seize the ureter in a stitch. After operation the bladder should be kept completely empty and constantly at rest by an indwelling catheter or a suprapubic drain. This should be maintained for several weeks. Success, I am sure, largely depends on this urologic principle.



Surgical Technique.

THE TECHNIQUE OF TOTAL HYSTERECTOMY.¹

By F. A. MAGUIRE,
Sydney.

Preliminary Steps.

THE patient is placed in the lithotomy position. A catheter is passed by the surgeon, who can then be sure that the bladder is empty. If the abdomen is opened and the bladder is found to be partially filled, steps should be taken at once to pass a catheter before the operation is proceeded with. A thorough vaginal examination is made to confirm the diagnosis and to determine the condition of the pelvic viscera. A speculum



FIGURE I.

is inserted, the cervix is inspected, and a uterine sound is passed to estimate the position and size of the uterus. The uterus may be curetted if the surgeon considers that it is necessary.

The vagina is disinfected with tincture of iodine and packed with gauze, which is inserted right up to the top of the vagina and around the cervix. Sufficient gauze is used to ensure that the vagina is packed firmly and a tail of gauze is left out between

¹ Accepted for publication on November 25, 1938.

the patient's thighs so that it can be removed by a nurse when required. A rectal tube is passed and inserted for about three inches, and after the legs have been placed flat on the table, the tube is fixed by strapping to the inside of the thigh. This is for the purpose of giving a retention enema at the end of the operation.

The Steps of the Operation.

The patient is placed in the high Trendelenburg position. The abdomen is opened in the usual way. It is necessary to make a fairly large incision for a total hysterectomy, as the surgeon has to work deep down in the pelvis. This cannot be done satisfactorily through a small incision. The retractors designed by the author give an excellent view of the pelvis when the bowel has been packed off. If the patient is well anæsthetized

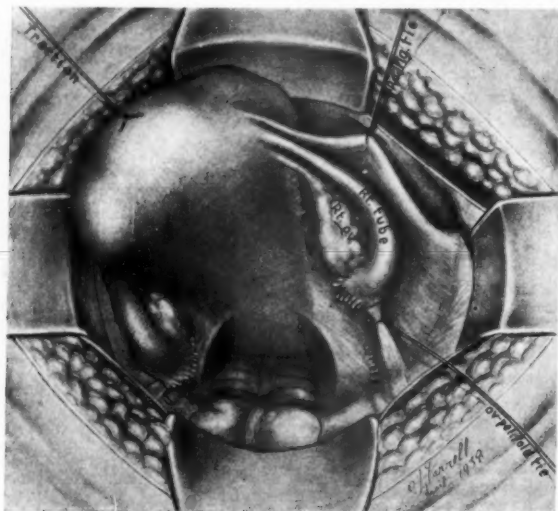


FIGURE II.

the bowel will fall away into the upper part of the peritoneal cavity when the abdomen is opened. When the abdominal retractors are placed in position the abdominal wall can be lifted so that the bowel falls away easily and sponges can be placed lightly along the brim of the pelvis to protect the abdominal cavity.

Step I.

In the first step a suture is passed through the *fundus uteri* and tied. It acts as a traction suture for the purpose of lifting the uterus well up out of the pelvis. In many cases it is necessary to remove the tubes and ovaries as well as the uterus, but in many others the ovaries can be spared. If it is necessary to remove the tubes and ovaries as well as the uterus, the ovarico-pelvic fold is picked up about one inch

from the wall of the pelvis and clamped with the pelvic forceps designed by the author, which, by reason of their curves, fall well out of the way of the surgeon; or the fold may be tied at this spot with ligatures. The round ligament is picked up about half an inch from the uterus, either by pelvic forceps or by ligature. As much of the round ligament as possible should be saved, so that it may be used at a later stage to sling the vaginal vault high in the pelvis. Figure I shows the clamps in position. Figure II shows the ovarico-pelvic folds and the round ligaments tied off.

Step II.

In the second step a Kocher's forceps is placed on the structures attached to the cornu of the uterus (Figure III). These three structures are from before backwards—the round ligament, the uterine tubes, and the ovarico-uterine fold or the "ligament of the

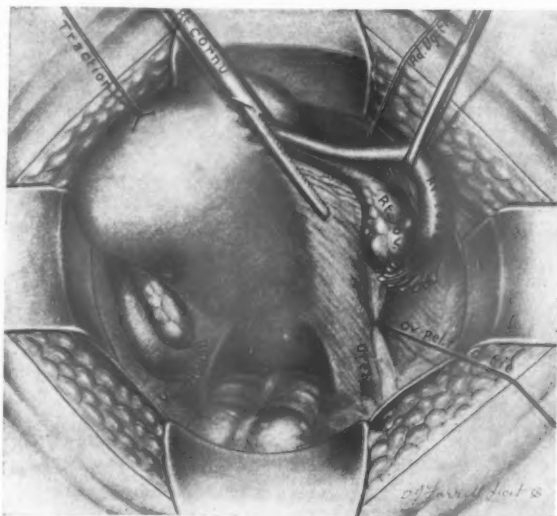


FIGURE III.

ovary". The point of the Kocher's forceps passes down to that part of the broad ligament which is avascular—well below the ovarian leash of vessels. This is easily seen when the structures are held up to the light.

Step III.

Step III is shown in Figure IV. The tube and ovary may be cut right away close to the Kocher's forceps in order to clear the field. The layers of the broad ligament are now opened up and these can be easily separated. At this stage careful inspection should be made of the areas where the ovarico-pelvic fold and round ligament were cut through, as very frequently small vessels ooze in this region and need to be picked up separately and tied. If they are left, they produce local collections of blood and

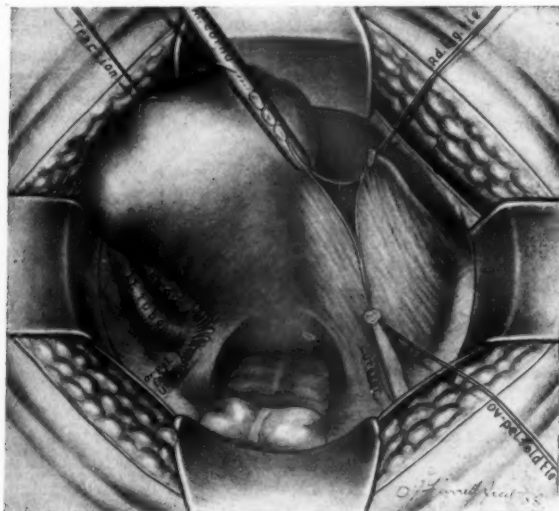


FIGURE IV.

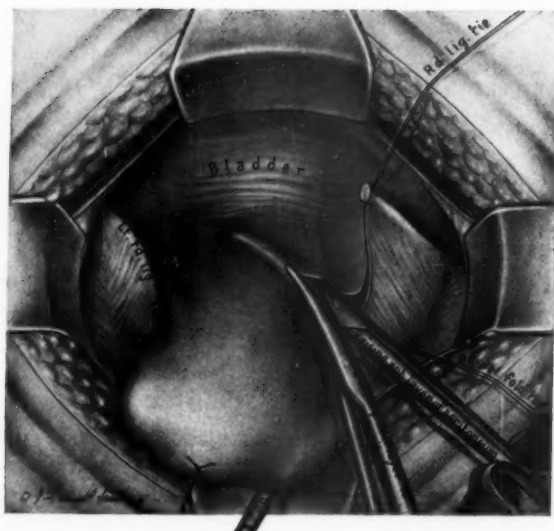


FIGURE V.

clots in the pelvis, obscuring the field for the later stages of the operation. It is essential in all stages of this operation to keep a dry clean field so that the anatomical structures can be easily recognized.

Step IV.

In the fourth step the point of a Mayo scissors curved on the flat is now inserted under the anterior leaf of the broad ligament, the uterus being strongly retracted towards

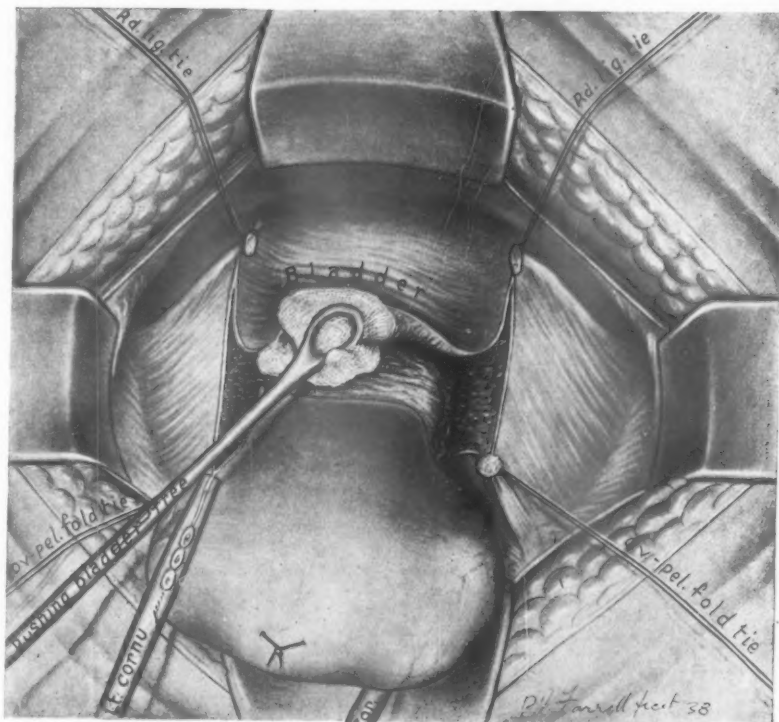


FIGURE VI.

the back of the pelvis by the traction suture and by the forceps on the right cornu of the uterus (Figure V). The peritoneum is lifted up where it is loosely attached to the front of the uterus and is cut through.

Step V.

The fifth step is shown in Figure VI. The steps previously taken (II, III and IV) are now repeated on the left side of the pelvis. The peritoneum on the front of the

at the side of the uterus. A Howard Kelly forceps is placed on the upper part of the uterine leash in order to control any blood which may run back from the uterus after the uterine vessels are cut through. The uterine vessels are now cut through between the two pairs of forceps (see Figure VII). The mouths of the uterine vessels are exposed and should be picked up with a second pair of forceps at this stage.

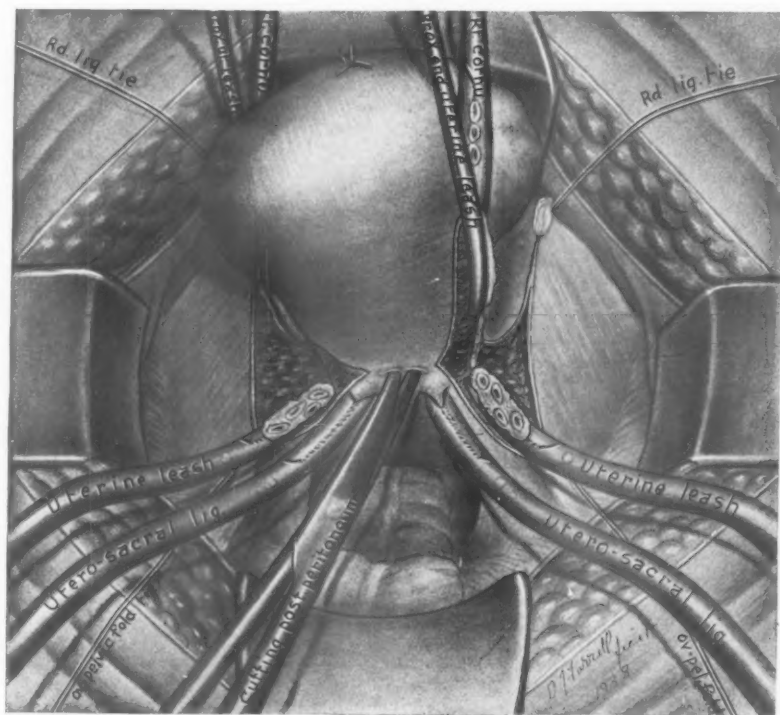


FIGURE VIII.

Step VII.

The seventh step is shown in Figure VIII. This is repeated on both sides of the uterus. The utero-sacral folds are picked up with pelvic forceps just below the level of the internal os. This prevents them from retracting down into the lower part of the pelvis and prevents a great deal of oozing from the back of the vagina. With scissors the peritoneum is cut across above the level of the utero-sacral folds.

Step VIII.

The eighth step is shown in Figure IX. The uterus is now attached to the vagina by a cylindrical sheet of tissue which consists of several layers. The most superficial of these is the utero-vaginal fascia, which is continuous from the vagina on to the uterus. If this is cut through with scissors in front of and behind the cervix, the uterus can easily be drawn up half an inch and the vaginal wall is exposed on all sides. The gauze in the vagina can easily be felt at this stage.

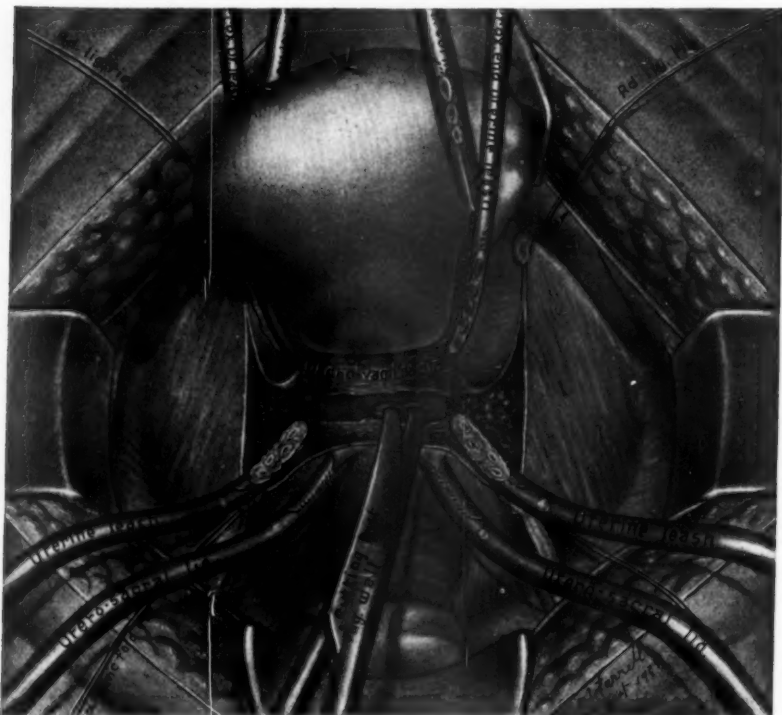
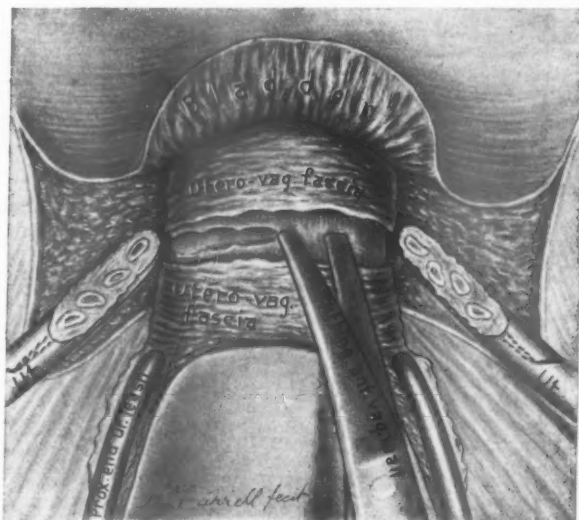


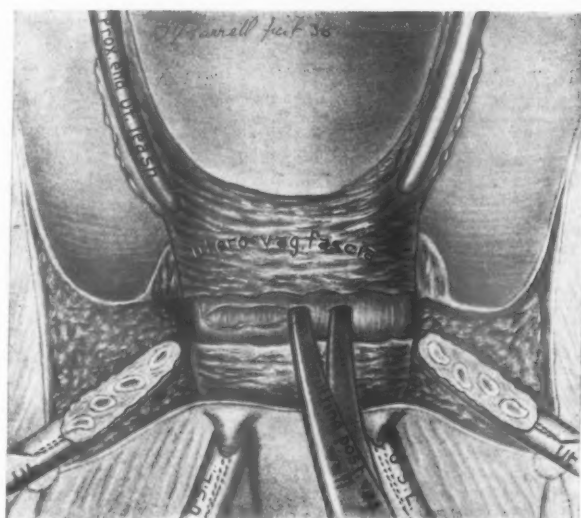
FIGURE IX.

Step IX.

Figure X (A and B) shows the condition of things when the utero-vaginal fascia has been cut through in front of and behind the uterus and at the side opposite the points where the uterine vessels have been cut through. The vaginal wall can now be cut through with scissors, and the cavity of the vagina can be opened either in front, at the back or at the sides of the vagina, according to the wish of the surgeon and the pathological condition which is being investigated.



A



B

FIGURE X.

Figure XI shows the uterus and the vagina in sagittal section. The peritoneum is shown dotted with its reflection over the bladder and the pouch of Douglas. When the peritoneum has been cut through, the uterus is attached to the vagina by the vaginal

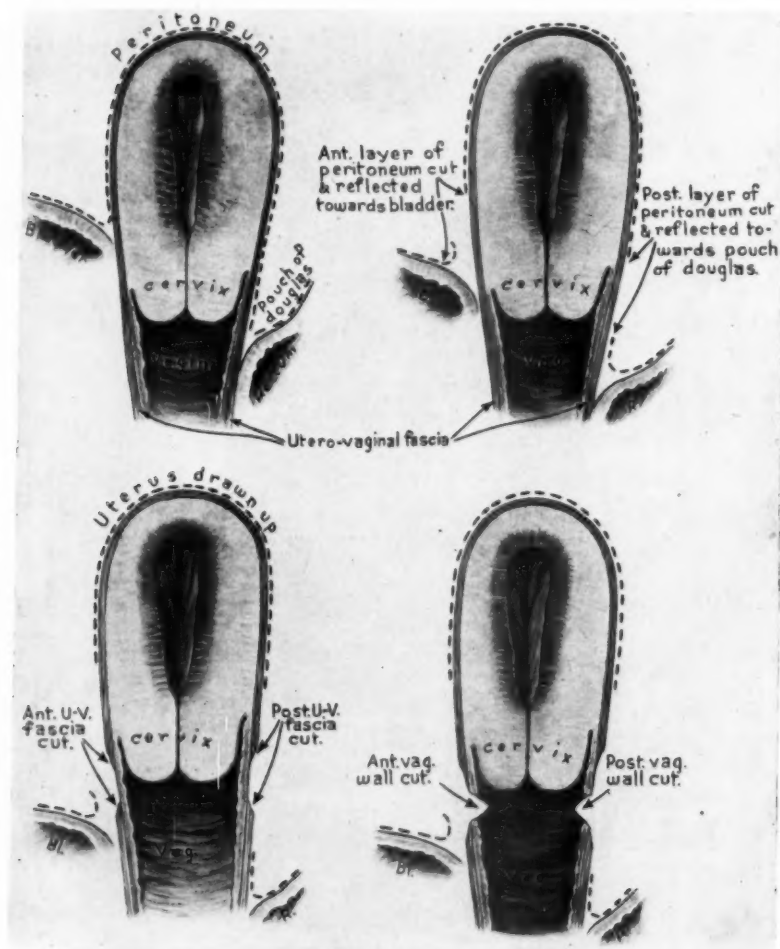


FIGURE XI.

wall and by the utero-vaginal fascia. When the utero-vaginal fascia is cut through, only the vaginal wall remains as the attachment, and when this is severed the uterus is free.

Step X.

In Figure XII the vaginal wall is shown in A as being open on either side. In B it is opened from the posterior aspect; in C it is shown as opened from the back and the uterus is still attached by a narrow band of vagina at the front. As the vaginal wall is opened, the lateral vaginal angles of the anterior and posterior edges of the vaginal wall are seized with Kocher's forceps (see C, Figure XII). The gauze in the vagina is now exposed.

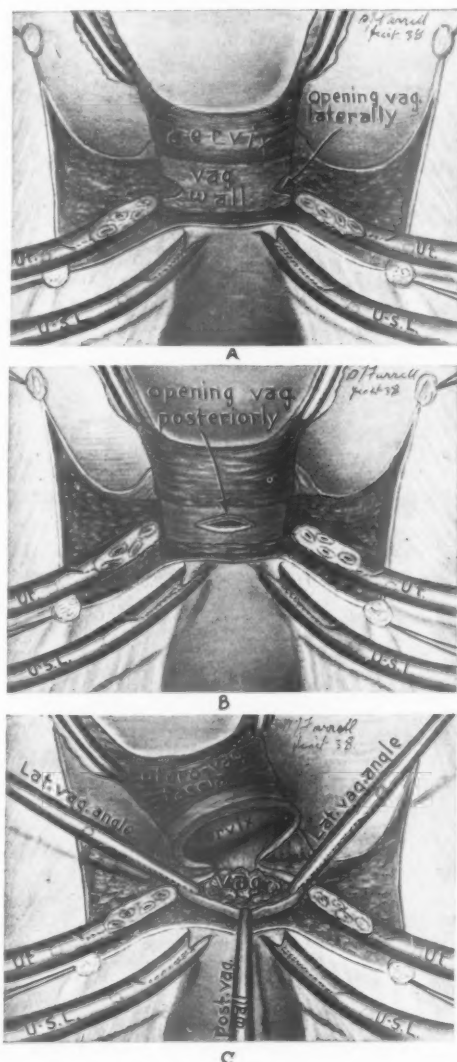


FIGURE XII.

Step XI.

The eleventh step is shown in Figure XIII. The uterus is completely detached by cutting through the remaining portion of the vaginal wall. The gauze in the vagina is fully exposed to view and can be withdrawn from between the patient's thighs by a nurse.

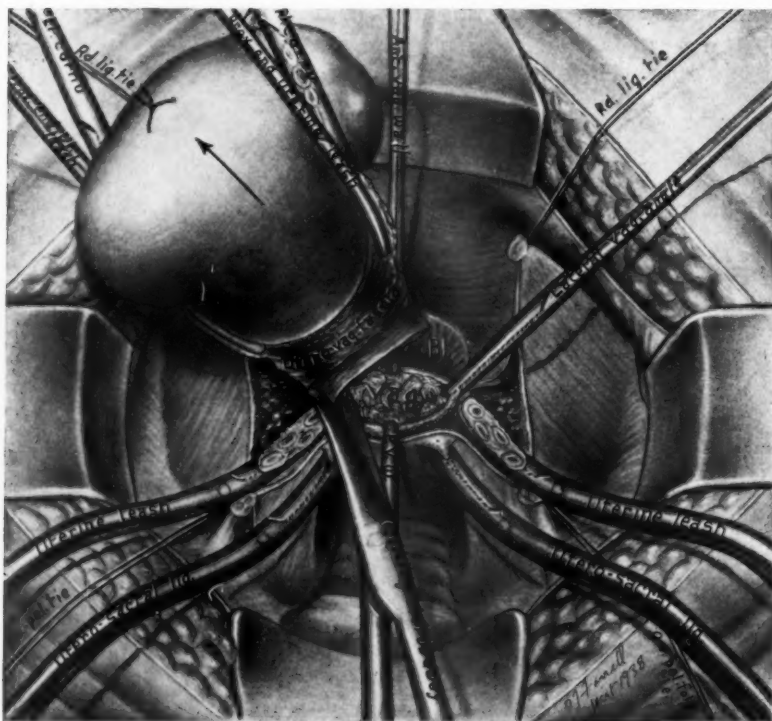


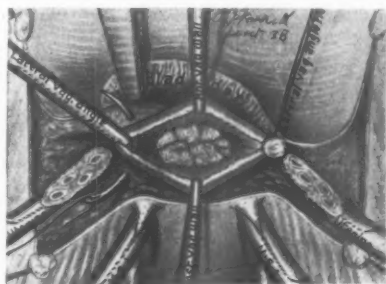
FIGURE XIII.

Step XII.

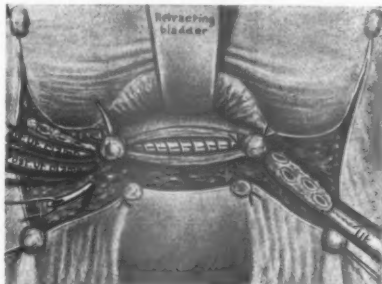
The twelfth step is shown in Figure XIV. The lateral angles of the vagina are now tied off. This suture must be very carefully passed so that it passes right through the lateral vaginal angle into the vagina. When it is tied, it completely controls the vessels at the lateral angles of the vagina. When this has been tied off on both sides a strip of plain gauze is packed down into the vagina from above. It is left in the vagina to absorb any blood that may run down into it. It is removed at the end of the operation before the patient is returned to bed. This leaves a clean dry vagina.

Step XIII.

The thirteenth step is shown in Figure XIV, C. The mucous membrane of the vagina is now closed with a number one chromicized catgut suture. The suture should extend from one lateral angle of the vagina to the other, and should reinforce the lateral vaginal angle. This is the first vaginal oversew and seals off the vagina from above.



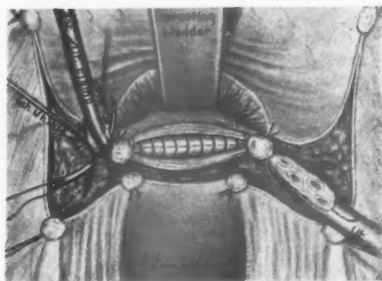
A



A



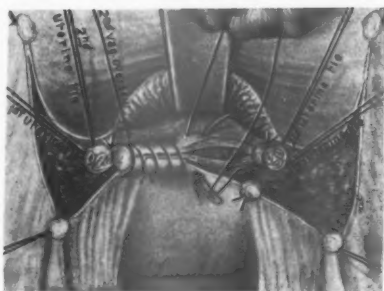
B



B



C



C

FIGURE XIV.

FIGURE XV.

Step XIV.

The fourteenth step is shown in Figure XV. A suture is placed under the pelvic forceps on the uterine vessels, and the first uterine tie is placed around the vessels after the first uterine clamp has been removed. This is repeated on both sides. The second uterine clamp is then tied off and this tie is cut short (see A, B and C, Figure XV). Finally the vaginal wall itself is brought together with a continuous suture of number one plain catgut, which is carried across from one uterine tie to the other and includes the peritoneum on the upper part of the anterior wall of the pouch of Douglas; it also includes the utero-sacral fold.

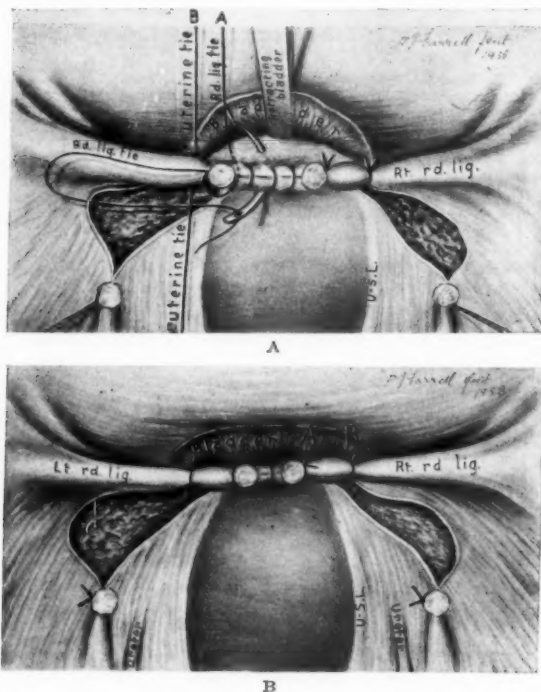


FIGURE XVI.

Step XV.

The fifteenth step is shown in Figure XVI. The suture on the round ligament is threaded on a needle. It is used as an anchor stitch and is passed into and through the upper part of the vagina and tied. Before this is done the first uterine tie is opened up and the round ligament is carried down between the two ends of the first uterine tie. The first uterine ligature is now tied around the round ligament so that the round ligament is anchored at two places into the top of the vagina. At the same time the pelvic connective tissue associated with the uterine vessels is firmly anchored to the lateral angle of the vagina (see Figure XVI, A and B). This is repeated on the other side of the pelvis.

Step XVI.

The sixteenth step is shown in Figure XVII. The peritoneum is brought together from one side of the pelvis to the other. The pouch of Douglas is restored to its proper depth. The vaginal vault is slung up by the round ligament and the uterosacral fold.

The retention enema is given by means of the rectal tube. The gauze that was passed through into the vagina is removed.

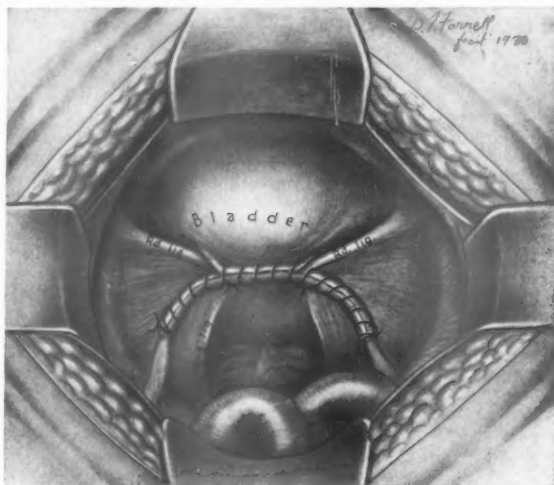


FIGURE XVII.

In those cases in which it is necessary or advisable to preserve one or both ovaries, the same steps are taken, except that the clamp or tie is placed between the ovary and uterus instead of between the ovary and the pelvic wall. The other steps of the operation are exactly the same, but the ovary is attached to the lateral angle of the vagina at the conclusion of the operation.

Case Reports.

TWO CASES OF RENAL NEOPLASM: CRAWITZ TUMOUR AND WILMS'S TUMOUR.¹

By THEODORE AMBROSE,
Perth.

Case I.

THE patient was a man, aged thirty-one years. He was sent to me on July 26, 1937, for an opinion regarding his gall-bladder condition. Two years previously he had suffered from jaundice.

Two months before coming to see me he had severe pain in the right side of the upper part of the abdomen, considered by his medical attendant, Dr. J. C. Bennett, to be due to a gall-bladder attack. He had been unable to eat fatty foods, and suffered from flatulence. His bowels were constipated and he had lost weight. His urine had been dark for two weeks. A dye test was carried out and the radiologist reported a pathological gall-bladder.

On examination the patient was thin and his tongue was thickly furred. The abdomen was flat and soft; there was pronounced tenderness in the right hypochondrium and across the epigastrium to the left side; no mass was palpable. Previous examinations of the urine revealed no abnormality. Operation upon the gall-bladder was recommended.

On the following day the patient, whose office was in the same building as my rooms, was brought to the surgery in a state of collapse, suffering from profuse hæmaturia. I was not available, but Dr. Troup attended to the patient and sent him to hospital; his condition was so desperate that Dr. Troup thought he would hardly reach the hospital alive.

The patient was seen later in the day at the hospital; he had no severe pain, but complained of discomfort from the mid-abdomen down to the bladder; his colour and pulse were bad; neither kidney could be palpated. The chief tenderness was still in the region of the gall-bladder; what urine was voided appeared to be almost pure blood. After three days the hæmaturia had ceased.

Dr. F. L. Gill made a rapid cystoscopic examination. The bladder seemed normal; some blood was seen dripping from the right ureter. On the left side a double ureteral opening was seen, suggesting a double kidney. Dye was excreted from the left ureters in three and a half minutes.

On August 2 an operation was performed through a very long Israel's incision. The right kidney was huge, extending up to five inches above the level of the costal margin. There were extensive adhesions about the kidney; the ascending colon was adherent, with the posterior peritoneum jammed between it and the kidney. The liver was adherent to the posterior peritoneum. The adhesions were stripped and the kidney was delivered with great difficulty, both hands being used as tractors. After delivery, the renal pedicle was ligated without much difficulty and the kidney was removed; there was very little hæmorrhage.

The removed organ—unlike a kidney—resembled a bullock's heart; it contained two handfuls of clotted blood in a dilated cavity. There was no sign of calyces. The lining was smooth and there was no irregular tumour formation. The upper third of the kidney was paler than the rest of the kidney substance, and was thought to be infiltrated with carcinoma. All who saw the specimen were quite sure it was not a hypernephroma. Above the upper pole, strongly adherent, was a firm yellow cap two inches long, an inch wide and half an inch thick.

¹ Accepted for publication on September 16, 1938.

The pathological report was: "Grawitz tumour" (hypernephroma). The pathologist, Dr. Michaels, thought the cap might be suprarenal body with fibro-fatty degeneration.

The patient made a good recovery, and when last heard of, in August, 1938, had put on a lot of weight and was feeling well. There has been no recurrence of gall-bladder symptoms.

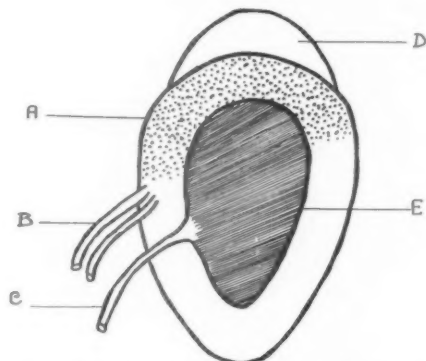


Diagram of tumour removed in Case I.
A = pale infiltrated area of tumour, B = renal vessels, C = ureter, D = adrenal body, E = filled with blood clot.

I consider that the gall-bladder must have been subjected to great pressure from the kidney mass, which was very high, and that this caused the lack of function in the organ. The accompanying diagram shows the structure of the specimen.

Case II.

The patient was a male child, two years of age, in the Children's Hospital under the care of Dr. R. H. Crisp. A large tumour mass had been noticed in the right upper abdomen two days before the child's admission to hospital; otherwise there were no symptoms. The child appeared quite healthy.

The tumour was lobulated and felt cystic to palpation; the urine was not abnormal; the blood showed a slight microcytic anaemia. Pyelograms showed the left renal pelvis to be normal. The right kidney was functioning; there was a hydronephrosis with obstruction to the passage of dye into the ureter.

Operation was performed on October 30, 1937, through a long right rectus incision. The peritoneal cavity was opened. The left kidney appeared quite healthy. The removal of the mass was tedious, requiring much stripping, but no great difficulty was experienced. After removal the mass presented three rounded conjoint tumours having the appearance of dermoid cysts and rather smaller than tennis balls. On section, however, these were found to be solid.

The pathological report was that the tumour was an embryonal adeno-carcinoma, resembling a Wilms's tumour.

The child suffered moderate shock, but was quite well the following day, and made an uneventful recovery. When seen recently the patient was very well and had no sign of recurrence.

SUCCESSFUL RESECTION OF A POPLITEAL ANEURYSM OF TRAUMATIC ORIGIN.¹

By DOUGLAS ROBB,
Auckland.

A MALE patient of fifty-nine years, a full-blooded Maori of genial disposition, was referred by Dr. A. J. Brass, of Opatiki, with the diagnosis of right popliteal aneurysm. It was difficult to be sure of some points in the history and symptoms, but for the previous three weeks he had suffered great pain and throbbing behind the right knee and could walk a short distance only on account of pain in the calf. About twelve months previously he had had an attack of similar pain and throbbing, but this had passed off. Nine years previously he had injured both legs severely in the following manner. Sitting with his legs dangling over the front end of some long sheets of corrugated iron on his cart, he had stopped on a bridge near his home. A motor car bumped the iron from behind, severely bruising both knees and legs against the back of his horse. This injury was worse on the right than on the left side, and was very severe. He was very extensively bruised, and was unable to walk to his house, and indeed for several weeks he could not walk at all. Gradually, however, he got well and was very active until the last twelve months.

He was stoutly built, in good general health, and had reared a large family. His blood did not react to the Wassermann test; the systolic blood pressure was 130 millimetres of mercury, and the diastolic pressure was 80 millimetres; there were no unusual findings in the cardio-vascular system generally. The right popliteal space was occupied by a pulsating expansile tumour the size of a hen's egg, which was just discernible on inspection. The right leg and ankle were slightly puffy and the calf was tender. Pulsation in the left popliteal space was more easily felt than in a normal limb, but no definite tumour could be made out. A moderate bruit was made out on auscultation over the right swelling. The left posterior tibial artery was easily felt pulsating behind the malleolus, but not that on the right side. However, arterial pulsation was easily felt in the region of the muscular belly of the *extensor brevis digitorum*, pulsation in the dorsalis arteries being doubtful on both sides. There was no sign of arterial deficiency in either foot or toes, though the history vaguely suggested that the muscles of the calf at some stage had been poorly supplied.

Dr. E. G. Sayers saw the patient with me and agreed as to the diagnosis of traumatic aneurysm, probably bilateral. We thought there had been in the past a serious threat to the leg and foot, possibly by peripheral embolism, and that there was still a serious risk of recurrence of this, together with fear of local rupture. We thought that collateral circulation was already at least partly established and advised exploration and surgical treatment. The risk of circulatory failure of the limb both with or without operation was explained to the patient and his relatives. The patient lived 250 miles from full surgical facilities, and this weighed with us in the decision to operate.

Under spinal anaesthesia and no tourniquet the swelling was exposed and defined, the artery at the upper end being cleared and surrounded with a tape at an early stage. The dissection of the main vein from the back of the aneurysm was exceedingly tedious, but was accomplished with the loss of two or three small tributaries only. The artery above and below was seen to be quite healthy. Three number 12 plaited silk ligatures were placed and tied above and three below, division being made so that one ligature remained at each end of the specimen. The dissection of the remainder of the sac from surrounding structures was also tedious. The wound was closed with a temporary drain, and healed well in its upper three-quarters. The lower quarter broke down, doubtless from poor blood supply, and healed slowly.

¹ Accepted for publication on September 13, 1938.

The limb at no stage gave rise to anxiety as to its circulation, remaining warm throughout. About the tenth day a small patch of discoloration was noticed at the inner border of the great toe-nail, but this gradually disappeared. There was pain in the calf and some general swelling from the third to the tenth day, with fever, and this I attributed to venous thrombosis. The popliteal vein had been handled a good deal during the operation. A little light massage on four successive days

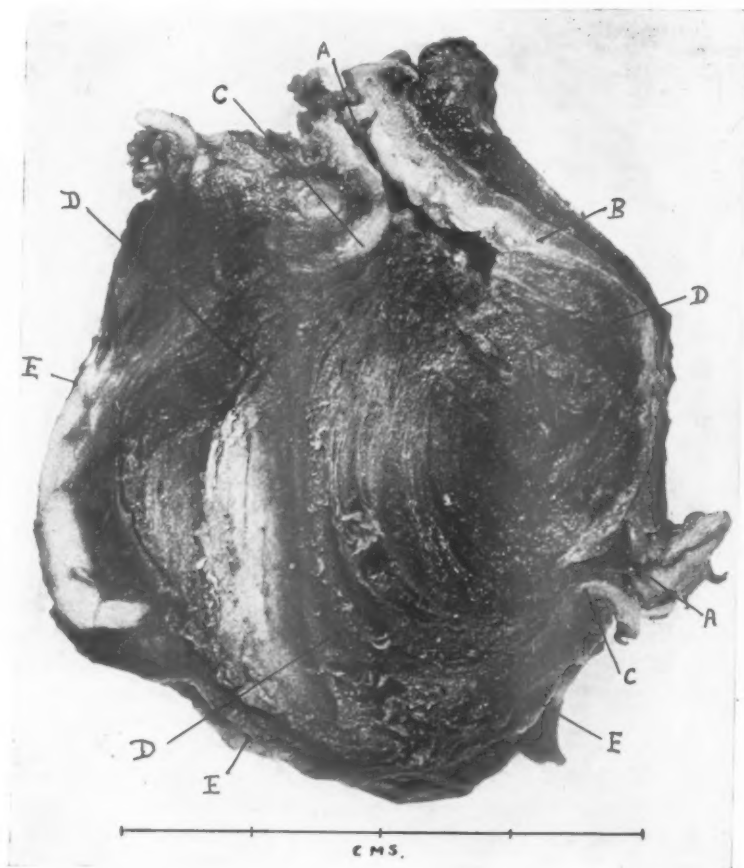


Figure showing resected specimen cut down the middle after being fixed. A = healthy artery; B = healthy wall; C = curled up artery wall; D = laminated blood clot; E = adventitious coat.

relieved the pain and swelling. The muscles of the calf must have suffered some circulatory deprivation, for they remained painful on stretching and tender for eight to ten weeks after operation, rendering recovery of walking power slow.

The specimen showed normal healthy arterial walls, except laterally, where a gap of 3.5 centimetres occurred, the arterial wall appearing to have curled both upwards and downwards at the site of rupture. The major part of the sac was entirely

adventitious and very thin in parts. Most of the blood clot which filled it appeared to be fairly recent. The gap left in the artery after resection was six centimetres. The exact sequence of events is difficult to be sure of, but it is likely that the artery had been ruptured by the blow nine years before, on its postero-lateral aspect, and that a small aneurysmal sac had developed. Twelve months and one month before operation there were probably sudden increases in the size of the sac with local pain. Any adjustment in collateral circulation necessary must have been fully accomplished before the operation, which apparently did little to disturb the peripheral circulation.

In deciding on a course of action in this case I had no previous experience on which to rely. W. H. C. Romanis (1935) was my chief guide, and his "Ideal" recommendation, namely, excision of the sac after ligation above and below, with preservation of the main vein, was fortunately possible in this case. It seems to have been the correct procedure, and would appear to resemble the local arterectomies described by Leriche *et alii* (1937) for embolism and other local obstructive conditions. I studied the writings of Matas in "Nelson's Surgery", but did not feel competent to undertake the procedures recommended. On the technique of ligating large arteries I found Mont. R. Reid (1934) helpful, and on preservation of the vein Mulvihill *et alii* (1931) provide a useful discussion.

Bibliography.

R. Leriche, R. Fontain and S. M. Dupertuis: "Arterectomy", *Surgery, Gynecology and Obstetrics*, Volume lxxiv, February, 1937, page 149.

D. A. Mulvihill, S. C. Harvey and V. Doroszka: "Simultaneous Ligation of Vein in Ligation of Large Arteries", *American Journal of Surgery*, Volume xlii, September, 1931, page 431.

Mont. R. Reid: "The Ligation of Large Arteries", *Surgery, Gynecology and Obstetrics*, Volume lxxiii, February, 1934, page 287.

W. H. C. Romanis: "Surgical Treatment of Aneurysms", *The Lancet*, Volume cccxix, December 7, 1935, page 1275.

The Australian and New Zealand Journal of Surgery.

All articles submitted for publication in this journal must be typewritten and double or treble spacing should be used. Each article should conclude with a brief summary and statement of conclusions. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without any abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given, with full date in each instance.

When illustrations are required, good photographic prints on glossy gaslight paper should be submitted. Line drawings, charts, graphs and so forth should be drawn on thick white paper in indian ink. Authors who are not accustomed to prepare drawings of this kind, are invited to seek the advice of the Editor if they are in any doubt as to the correct procedure. Skiagrams can be reproduced satisfactorily only if good prints or negatives are available.

VOL. IX.

JANUARY, 1940.

No. 3.

EXPERIMENTAL SURGERY.

THE rapid advances in surgery during the last few decades are due to the efforts of many investigators who have attacked the questions and difficulties from quite different points of view. The divergence of methods of attack is made obvious by comparison of the clinical with the experimental approach, and the importance of the second is often overlooked by clinicians.

Of the many surgical problems, three groups stand out specially. The first is the determination of the nature and course of pathological processes; the second is the elaboration of various methods of treatment; and the third the development of appropriate surgical technique. These all can be, and have been, greatly clarified or improved by the experimental method. By its use many of the problems have been simplified, since in the laboratory animal it is possible to eliminate many complicating factors which are present in the "naturally occurring experiment", that is, in the fully developed disease condition. The results following the use of various methods of treatment have been observed and thus their relative value determined, and finally different technical methods have been elaborated.

Very different points of view have been adopted toward the experimental method of study. On the one hand, there is the experimental physiologist and pathologist to whom the animal is a complex mechanism, interference

with which may throw light on the problems of normal and abnormal conditions. The wealth of information that has accumulated even in the last few years has demonstrated its value beyond all doubt. On the other hand, there are the lay, and even some medical, people who consider that nothing justifies the use of animals for experimental purposes. This view culminates in the various anti-vivisection societies and institutions.

It is not necessary to discuss this question here in any detail. The opinion of the antagonists of the experimental method is obviously the result of complete ignorance and a complete subservience of demonstrable observations and values to emotional considerations. The most frequently enunciated objection is that of cruelty, but anyone who has observed animals in a properly supervised laboratory knows that the animals receive as much or even greater care than do patients in hospital. Such care is essential if results of any value are to be obtained. Even if, as maintained by some extremists, animal life is more important than human, it is worth noting that information obtained has been used to the very great benefit of animals by veterinary surgeons.

The value of the method was demonstrated in the last century by such workers as Cohnheim, Barnard, Treves, J. B. Murphy, Rehn and many others. It is noteworthy that much of our knowledge of such conditions as intestinal obstruction dates from this time, and problems, such as the value of drainage of the peritoneal cavity in infective conditions, which are still the subject of much uncritical argument, were elucidated in large measure in the last century.

In the last few years the experimental method has been employed with remarkable success, and the literature abounds with the observations of such investigators as Carrel, Graham, Mann, Bollman, Beck and Markowitz in America, Wilke and his co-workers and O'Shaughnessy in Great Britain, Tuffier, Duval and Leriche in France, and Trumble in Australia, to mention only a few.

The limitations of the method are becoming clearly defined. Some workers have not appreciated that results obtained in the normal tissues of healthy animals are not necessarily comparable with what one might expect and does observe in diseased human organs. This does not indicate a shortcoming in the method, however, but merely that careful consideration must be paid to all aspects of a problem before far-reaching conclusions are reached.

There is one side of this question that has received practically no consideration in this country. In some parts of the world animal experimentation is employed in the teaching of the technique of surgical procedures to students and young graduates. The value of this, when adequately controlled, is self-evident. That academically qualified, but otherwise inexperienced, operators require special tuition and control is tacitly assumed

by the College when it has advocated and supported the method of apprenticeship now in force in the public hospitals of this country, and anyone who has observed the effects of this method of training will be seized with its inestimable value.

Nevertheless, many operations, whether performed for the first time or merely for the first time by a particular surgeon, must of necessity be in the nature of experiments. A training in experimental surgery, and especially the development of an attitude of mind that demands the demonstration of the value of a method (or the individual's ability to perform the procedure successfully) on an animal before it is attempted in the human being, will be of considerable importance to the patient and cannot but raise the general standard of surgical technique. Many of the most capable surgeons and ablest technicians have spent a great deal of time in their earlier years, and in some cases even later, in developing their skill in this way.

The recognition of the important part played nowadays by this class of surgery is demonstrated by the formation of chairs of experimental surgery in many parts of the world. Obviously this has been practicable only where financial considerations have been favourable. However, even where this is not practicable, the importance of the development of the experimental side of this work should be appreciated in departments of general surgery. When special departments can be established in our universities or a special research school formed by the College (as has been so successfully done with the Buckston Browne Farm by the Royal College of Surgeons), a new era in the progress of surgery in this country will be inaugurated.

E. S. J. KING.

Surgery in Other Countries.

[In this column will be published short résumés of articles likely to be of practical value from Journals published in other countries and not readily accessible to surgeons in Australia and New Zealand.]

TECHNIQUE AND APPLICATION OF BRANDES'S DRILLING OSTEOLASIS.

F. Mondry: "Zur Technik und Anwendung der Bohrosteoclase nach Brandes", Zentralblatt für Chirurgie, 1939, Number 13, page 731.

WHILST severe rickets is seen seldom, old healed unrecognized rickets often causes sclerosis and deformity of bones, which are more commonly seen. The bowing of the tibia and fibula results in transmission of weight incorrectly through the ankle and subastragaloid joints, with consequent foot troubles. The author states the treatment of the deformities of rickets is too conservative, especially in regard to bow legs. These should be operated upon more often, although osteoclasis with the hands is easy enough in the florid stage. In sclerosed bone of healed rickets manual osteoclasis is not always possible, especially if it is intended that the fracture of the bones shall

occur at a particular spot. Osteoclasis with mechanical osteoclators, if performed by a determined surgeon, has caused so much trouble, for example, fractures at unintended spots, splintering of bone, damage of joints, especially the ligaments, nerve damage *et cetera*, that the use of these instruments is now held in disfavour.

In 1932 Brandes recommended a subcutaneous drilling osteoclasis without a big open operation, so that deformities are dealt with more often because of the simplicity of the method. Brandes first tried Beck's wire drilling, but was not satisfied, and then



FIGURE I.



FIGURE II.

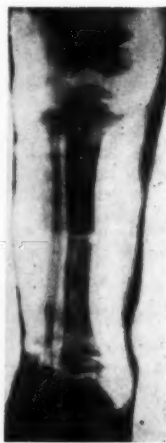
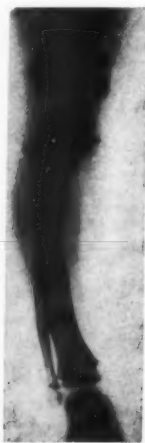


FIGURE III.

used a larger diameter drill from one or two tenotome incisions. This author, however, is using the ordinary Kirschner wire, but uses the Klapps drill wire guard and holds it so that he can exactly divide the bone by drill holes at any level and in any direction (Figure I). A tourniquet is used. He has treated nine children between two to five years.

THOMAS KING.

INTRAVENTRICULAR USE OF LIPIODOL IN THE DIAGNOSIS OF CEREBRAL TUMOURS.

Dr. Yves Piette: *Zentralblatt für Neurochirurgie*, February, 1939, Number 1.

THE author describes the technique employed in 600 ventriculographies in the neurosurgical service of Professor Manuel Balado, of Buenos Aires.

After pointing out that the invention of pneumo-ventriculography by Dandy in 1918 has cleared away one of the principal obstacles to the advance of neurosurgery, by

providing a means of precise localization, the author describes certain of the defects inherent in the employment of air for this procedure. The difficulty of visualizing the third ventricle, the insufficient contrast, and the escape of air from the ventricles sometimes disappoint the surgeon when a certain localizing diagnosis may have been reasonably anticipated.

Lipiodol, employed by Balado for ten years, produced no untoward results. On the other hand, many problems have been resolved which were incapable of solution by air injection. Perfect contrast is obtained, and no immediate severe reactions are noted. Occasionally, some days after the procedure, the patient may complain of pain in the legs, along the sciatic distribution. This is a common sequel to the use of lipiodol in the spinal canal.

The operation of ventricular puncture is performed with the patient lying prone. One trephine opening



FIGURE I. Normal ventriculogram, showing lateral and third ventricles in the "forehead to plate" position.

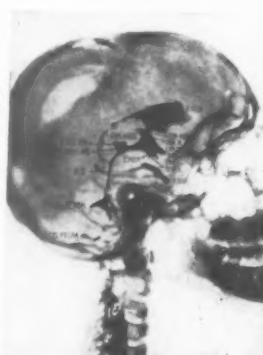


FIGURE II. Lateral position. Normal appearance of lateral ventricles, foramen of Monroe, third ventricle, fourth ventricle and cisterna magna.



FIGURE III. Later view of the third ventricle, showing "amputation" of its anterior part by a meningioma of the tuberculum sellæ.

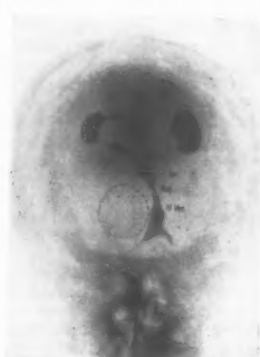


FIGURE IV. "Occiput to plate." The fourth ventricle and the aqueduct are pushed to the right, forming a concavity facing the left.

is made in the occipital region, the posterior horns of the lateral ventricle are tapped and the fluid pressure is measured. Enough fluid is withdrawn until the pressure is normal, and then one cubic centimetre of lipiodol is injected. Alternate aspiration of one cubic centimetre of

fluid and the injection of one cubic centimetre of lipiodol are continued until four cubic centimetres have been introduced. This technique produces a better dispersion of the oily substance. Four exposures are made with the patient in the following positions: postero-anterior (forehead on the plate); lateral, with inclination of the head at 45°; the same position, five minutes later; fronto-occipital, with flexion of the head at 45°.

The pictures are taken at five-minute intervals, the heavy lipiodol passing into the most dependent parts of the ventricular system. The first position shows the frontal horns, sometimes the temporal horns and the third ventricle. Views of the aqueduct of Sylvius and the fourth ventricle are obtained in the third position, and finally a good picture of the third ventricle is obtained in the fourth exposure. The interpretation of the pictures requires some experience, but the author claims that the four plates enable the investigator to piece together the outlines of the whole ventricular system. The accompanying illustrations speak for themselves.

This method would appear to offer certain advantages in cases in which a perfect picture of the third ventricle and the aqueduct and the fourth ventricle is desirable.

A. E. COATES.

PULMONARY EMBOLISM.

Bardin: *"L'embolie pulmonaire: Recherches cliniques, anatomiques, pathogéniques et thérapeutiques."*

THIS work of 192 pages, with eleven illustrations and two coloured plates, published by Masson et Cie, of Paris, is reviewed by Pierre Brocq in *Journal de chirurgie*, July, 1937, at page 96.

For the last few years the subject of pulmonary embolism has been very prominent, and numerous works have appeared on the subject. Many very difficult problems still remain to be solved. *Ætiologically:* Why is embolism so frequent, in spite of everything being done to prevent it? *Symptomatically:* How can one be sure that a patient has had a sudden post-operative embolus, and not some other pulmonary or cardiac catastrophe? *Pathogenically:* Why does a clot blocking a branch of the pulmonary artery cause rapid death, when the pulmonary pedicle can be ligated with impunity during an operation on the lung for cancer or bronchiectasis? How is it that an embolus blocking an arterial area can produce hæmorrhage in that same area? And, finally therapeutically: What is the effective treatment for an embolism once it has occurred, and how can its occurrence be prevented? These are questions urgent enough to surgery, of which no solution is yet to hand.

In this book Pierre Bardin not only summarizes the work of recent years, but publishes the results of his own work, clinical, anatomical and experimental, extending over the past six years (in conjunction with Professor Villaret, Justin Besançon and Jacques Delarue), and sets forth his own personal views on the pathology and treatment of pulmonary embolus.

He considers that the frequency of pulmonary embolism has recently been much exaggerated. There is no definite clinical or radiological criterion which will enable us to say with certainty that an embolism has occurred, apart from the site of pain and the blood-stained sputum. The symptoms do no more than indicate the nervous upset and the general reaction of the organism. Embolus seldom causes sudden death in the medico-legal sense of the term. Most patients die after the lapse of a few minutes, with symptoms not of asphyxia, but of distress or acute pulmonary oedema or even of cardio-vascular collapse, of such a sort that it is not necessarily impossible to institute effective medical treatment. Bardin's researches seem to show, in view of the striking contrast between the size of the embolus found and the gravity of the dyspnoic symptoms it produces, that embolism produces a definite reflex effect at the arteriolar level, with a twofold action: local (arterio-capillary reflex with production of an infarct) and general (arterio-nervous reflex with action on the respiratory centres).

In a very important chapter on therapy Bardin lays out lines of curative and prophylactic treatment on a new basis. He does not believe that much can be expected from the Trendelenburg operation, which he reviews very thoroughly, and the indications for which he discusses in detail. Energetic medical treatment soundly based seems to him to be much more hopeful, provided that it is instituted instantly. The methods recommended include: injection of atropine, papaverine and morphine given in "enormous" doses at the very moment of onset, to inhibit the respiratory reflex which is the essential factor; if needed, artificial respiration by thoracic pressure and rhythmical traction of the tongue continued for a very long time to try to reestablish

pulmonary ventilation; and intravenous injection of ouabain and adrenaline to meet the simultaneous cardio-vascular collapse.

In the prevention, he reviews and discusses all the pre-operative and post-operative precautions suggested, and insists again on those procedures aimed at the prevention of the onset of pelvic or femoral thrombosis. Since, in spite of these measures, pulmonary embolism will nevertheless occur occasionally, he suggests a new line of action based on his own laboratory work. When an embolism is considered likely to occur, he advises the regular daily injection of 0.25 to 1.0 milligramme of atropine, depending on the tolerance of the patient, and the administration by mouth of six centigrammes of ephedrine and ten grammes of bicarbonate of soda. This *régime* can be continued for some weeks without producing harm. Only the future will reveal how effective it really is.

ARTHUR E. BROWN.

HYDATID DISEASE.

Oscar Ivanissevich and Roberto Ferrari, of the University of Buenos Aires: "*Equinococosis Hidatidica*", *Boletín del Instituto de Clínica Quirúrgica*, March-April, 1938, page 255.

THIS is a clear-cut, concise and fully illustrated exposition in Spanish of the nomenclature, biology and clinical morphology of the hydatid parasite in the adult stage as seen in the dog, and in the cystic stage as seen in man.

The numerous drawings and photographs of the echinococcus and its ova, the hexacanth embryo and its migrations, the cyst and its various processes of evolution, and the prophylactic poster admirably explain the main points concerning hydatid disease that all surgeons and physicians should know, but about which so many are ignorant. The authors indicate that they had taken a prominent part in the preparation of the comprehensive hydatid exhibit that was a feature of the International Congress of Surgery held at Brussels in September, 1938, and which included prevention propaganda sent from New Zealand.

L. E. BARNETT.

THE LARGE BORE ASPIRATION TROCAR IN THE TREATMENT OF HYDATID CYSTS.

Enrique Finochietto, Buenos Aires: *Archivos Internacionales de la Hidatidosis*, Volume iv, 1938.

For the aspiration of hydatid cysts a very wide cannula (about 18 millimetres in diameter) is recommended, and within it is the hollow trocar with sharp bevelled penetrating end which can be protruded only by pressure on a plunger. Otherwise the trocar is kept safely withdrawn by spring action under cover of the cannula.

The evacuation is made at high pressure (40 to 60 centimetres of mercury), is very efficient, and does away with the necessity for formolage, there being no vestige of hydatid material left within the sac, even in the multivesicular, multilocular and other complicated types.

The article is fully illustrated by detailed drawings and specifications of the author's mechanical device.

L. E. BARNETT.

HYDATID DISEASE IN DALMATIA.

Jaksa Racic, Split (Spalato): *Archivos Internacionales de la Hidatidosis*, Volume iv, 1938.

DALMATIA is one of the European countries where hydatid disease is uncommonly prevalent, and Racic gives an account of his experience of 354 cases in which he operated between the years 1914 and 1937. The usual diagnostic errors and surprises are noted, for example, lipoma, fibroma, gall-bladder and common duct troubles, and cancer of liver and adjacent parts have all been the diagnostic labels in conditions that turned out to be hydatid cysts.

Hydatid thrill in varying degree was noted in 4% of cases, but only rarely was it clearly marked. Racic has treated almost all his patients by the old tried and trusted method of marsupialization, and has usually adopted xeroform gauze packing and drainage. He does not advocate the no-drain operation nor does he employ formolage.

He has noted on many occasions the bulging of a second cyst (sister cyst) into the cavity of the one first opened. Multiplicity was observed in 20%. When in difficulty with deep seated or suppurating cysts, he resorts to a two-stage technique. If much overlying tissue has to be cut through he uses a cautery knife.

A large proportion of his patients came from the peasantry class, illiterate, dirty and fatalistic, so that operations had often to be undertaken in grossly delayed and unfavourable cases. The post-operative mortality was approximately 15%. Aseptic and antiseptic technique was very thorough, and as a rule his patients left hospital within six weeks with the wound soundly healed. Recurrences were noted in 3%. He has had no trouble from post-operative hernia, and this he ascribes to the employment of a small incision.

The article is illustrated by six good radiograms of renal and pelvic bone cases and a map showing the habitat in Dalmatia of the 354 patients referred to.

L. E. BARNETT.

Reviews.

PERIPHERAL VASCULAR DISEASES.

Peripheral Vascular Diseases: Diagnosis and Treatment. By WILLIAM S. COLLENS and NATHAN D. WILENSKY; 1939. Springfield and Baltimore: C. C. Thomas. Medium 8vo, pp. 243, with 77 figures, including 3 colour plates. Price: \$4.50 net.

THIS monograph is a review of the principal diseases which affect the peripheral vessels. It is divided into two parts: the first deals with the general questions of anatomy, physiology, pathology, symptoms and signs, diagnosis, methods of examination *et cetera*; the second is a description and review of methods of treatment.

Chapter II, which deals with methods of examination, is very complete, and should be of great value to those interested in this subject of peripheral vascular disease.

The various conditions dealt with comprise such conditions as arteriosclerotic disease ("peripheral vascular sclerosis"), *thrombo-angiitis obliterans* and the Raynaud phenomenon, and mention is made of cervical rib, injury, thrombophilia *et cetera*. A short chapter is devoted to diseases associated with vaso-dilatation.

There is complete silence on the interesting questions of inflammatory diseases of vessels, such as *polyarteritis nodosa* and the numerous conditions similar or related to this. It would seem that the book is largely a compilation of published and established work without any great consideration of the more difficult and recent problems of the subject. This, however, may be an advantage to some students.

The chapters on treatment of the various conditions is one of the best parts of the book and is sufficiently complete and well set out to be of great value.

Illustrations are, for the most part, appropriate and well reproduced, though occasional reproductions—particularly photomicrographs—leave something to be desired.

The bibliographies are given at the end of each chapter, and, though well chosen, are too incomplete to be regarded as really representative of current opinion. Many statements made in the text, which appear to be derived from experience of other writers, are not supported by references to significant papers.

The general form of the book is good, the type is clear, and there is an adequate index. Altogether the book can be recommended to surgeons interested in this subject and to students wishing to obtain a lucid, brief, but comprehensive, account of the main clearly recognized conditions affecting the peripheral vessels.

COLONIC AND RECTAL CANCER.

Cancer of the Colon and Rectum. By F. W. RANKIN and A. S. GRAHAM; 1939. Springfield and Baltimore: C. C. Thomas. Crown 4to, pp. 358, with illustrations. Price: \$5.50 net.

"CANCER OF THE COLON AND RECTUM", by Rankin and Graham, is an invaluable addition to the library of the specialist and also the general surgeon. It is indeed a most complete volume on this particular subject.

The chapter on anatomy and physiology is excellent, especially the description of that all-important subject "the blood supply of the large bowel". Deserved praise is given to those pioneers of rectal surgery, Miles and Lockhart-Mummery.

The authors agree with Hurst that "not the slightest sign of inflammation is observed in the mucous membrane of patients with so-called mucous-colitis unless they have been treated with irritating enemas".

These authors rightly lay great stress on the importance of polyposis in the large bowel being definitely regarded as a pre-malignant condition. "It follows from this that on no account should a single adenoma of the rectum be allowed to remain, even if it is causing no troublesome symptoms; it should be freely removed as soon as possible."

Rankin again stresses the need of digital examination of the rectum and the use of the sigmoidoscope if any suspicion arises. He quotes Brown's series of 209 cases of cancer of the rectum and sigmoid in which only 15% of the patients had the advantage of a sigmoidoscopic examination.

The authors draw attention to the greatly added difficulty in operation and the added danger from infection in obese patients, especially males. With multiple stages of operation, when necessary, for resection of growths in the large bowel the mortality has been much reduced in the last ten years.

It is rare for an acute intestinal obstruction to supervene on a carcinoma of the large bowel, and thus graded measures can be arranged by the surgeon.

Rankin thinks that metastases to the liver in cases of cancer of the rectum are much more frequent than is usually thought. In 919 cases of cancer of the rectum in which laparotomy was performed, the liver was involved in 100 cases. Radiotherapy, in the opinion of the authors, is only an adjunct in the treatment of cancer of the rectum, and "carcinoma of the rectum is primarily a surgical disease". The chapters dealing with the surgery of the large bowel are clear and concise and are well illustrated.

That excellent instrument the "Rankin clamp" is used extensively by the authors.

SURGICAL TECHNIQUE IN OTO-LARYNGOLOGY.

A Treatise on the Surgical Technique of Oto-Laryngology. By G. PORTMANN; 1939. London: Baillière, Tindall and Cox. Imperial 8vo, pp. 675, with 474 illustrations. Price: 57s. net.

THE American edition of Dr. Portmann's book has been revised and reedited. The author states: "I have attempted to depart from the consecrated habits of time and the authority of my predecessors by presenting only those procedures that I follow in my service at the Tondü Hospital."

As a presentation of Dr. Portmann's methods "from the time preceding the operation until recovery has been definitely established", the book leaves nothing to be desired. Four hundred and seventy-four illustrations, giving a visual representation of various operative steps, are a feature of the work.

General principles of special surgery and anaesthesia are discussed in the first two chapters. The author expresses his preference for local anaesthesia, which, if we may judge by the description of general anaesthesia, is apparently influenced by the inadequate methods employed by his anaesthetists.

Sections dealing with various mastoid operations are beautifully produced. An illustration covers three-fourths of each page, and in turning these over one obtains a cinema-like presentation of the operative steps. In the chapter on otogenous meningitis, infection of the subarachnoid space via the labyrinth is omitted, although it is referred to in a later chapter. An infected labyrinth is an easier primary focus to eliminate than a petrositis. This section will no doubt be revised to include the use of chemotherapy, which has provided both hope and remarkable success in the treatment of this *bête noire* of otologists.

The otological approaches to intracranial abscess and petrous apex suppuration are excellently discussed and illustrated. Fifty pages are devoted to operations on the lateral sinus and jugular vein, many of which have been abandoned by other authorities.

The section dealing with nasal operations resembles the above in the excellence of illustration and presentation, the only regrettable inclusion being a description of intranasal curettage of the ethmoidal cells and of the fronto-nasal duct. In this country students are taught the futility of these procedures. The description of the radical frontal sinus operation, on the other hand, fails to stress the importance of adequate

exenteration of every ethmoidal cell. Failure to observe this has wrecked many otherwise efficient frontal sinus operations.

Tonsillectomy proved the greatest surprise. This is the commonest operation in oto-rhino-laryngology, and procedures such as guillotine enucleation with the patient sitting in the upright position cannot be accepted as modern technique.

Laryngeal operations occupy the last hundred pages, and again leave nothing to be desired in their manner of presentation. Two technical details in the author's performance of laryngectomy are of importance. Firstly, preliminary tracheotomy, very low in the neck, is maintained as the respiratory opening independently of the opening where the larynx has been severed from the trachea. The latter opening is stitched to the skin and protected from salivary secretions by packing. Secondly, no attempt is made to close the pharynx at the primary operation. Mucous membrane is approximated to the skin edges and the pharynx is kept packed off from the wound. Feeding is carried out through a tube inserted into the œsophagus through the pharyngostomy opening. Secondary closure is effected about two months later.

Students of operative surgery should find this work invaluable, particularly during their work on the cadaver. Practising specialists will find the book a most valuable guide when confronted with the rarer operations in their field.

DIET AND NUTRITION.

Diet and Nutrition: A Synopsis for Nurses and Students of Dietetics. By V. L. COLLINS, M.D.; 1939. Melbourne: W. Ramsay (Surgical) Proprietary Limited. Demy 8vo, pp. 39. Price: 2s. net.

"DIET AND NUTRITION" is an excellent review of the fundamentals of nutrition, written by one who has produced practical results in the reduction of sickness among nurses by attending to their diet. It is written in a simple and non-technical style and could well be read by all lay people, particularly those concerned with the provision of meals in schools and institutions. At the end of the book, various specimen diets and charts of food values are included for ready reference. The importance of diet is becoming more and more apparent in the prevention of disease, and it is high time instruction in this subject was made compulsory during school days. This book would form an excellent textbook for such classes.

SURGICAL TECHNIQUE.

Modern Surgical Technic. By MAX THOREK, M.D., K.L.H., K.C., in three volumes, with a foreword by D. C. BALFOUR, F.A.C.S.; 1938. Philadelphia: J. B. Lippincott. Imperial 8vo, pp. 2,146, with 2,174 illustrations. Price: £10 10s., payable at 21s. per month, or £9 9s. cash.

"MODERN SURGICAL TECHNIC", a work comprising three volumes of 2,146 pages, written by Max Thorek, is one of the most important surgical publications of recent years, and is a monumental work for a single author.

The book aims to be a complete and most up-to-date account of every accepted operation, and it can be said that it fully accomplishes this object. Technique of operations in all parts of the body is described concisely or by the step-by-step method, and almost every operation stage is beautifully illustrated. Surgical pathology and symptomatology are not dealt with; the work is concerned with technique alone.

The first volume deals with general operative considerations, the surgery of the head and neck and plastic surgery; the second with the surgery of the nerves, vessels, bones and the surgery of the breast and chest; and the third with the surgery of the abdomen, hernia, genito-urinary and gynaecological surgery. As the scope of the work has been limited to operative technique, the author has been able to deal in great detail with important branches of surgery, such as those of the abdomen, thorax and cranium. The section on abdominal surgery is a special feature of the book.

There are 2,174 illustrations, many of them photographs by Max Thorek himself, who is famous as an art photographer and a Fellow of the Royal Photographic Society. The smallest operative procedures are illustrated. No controversial matter has been included.

Although the book is intended for the surgeon, or for the general practitioner who is occasionally called upon to perform emergency operations, it will serve as a work of reference for students. As a vade-mecum for details of technique of modern operation methods and a guide to methodical operating, the surgeon will find this book of special value and one that he can ill afford to be without.

SURGICAL SUTURES AND LIGATURES.

Surgical Sutures and Ligatures. By E. J. HOLDER, B.Pharm., Ph.C.; 1939. Edinburgh: E. and S. Livingstone. Large crown 8vo, pp. 63, with 8 figures. Price: 1s. 6d. net.

THIS little handbook should be possessed by all persons concerned with the sterilization and preparation of catgut for surgical use. Nowadays, few surgeons prepare their own ligatures; but many public hospitals, for reasons of economy, do their own sterilization, and it is essential that the processes they use should be above reproach.

We are glad to see on page 49 the fact stressed that alcohol is not sterile—a point which is not sufficiently realized in routine practice. Most sterilization is taken as a matter of course in modern hospitals, and it is only when a tragedy occurs that the organization is reviewed. The reading of this booklet shows the many slips which may occur, and it behoves all medical superintendents to study the contents and to see that the method they are using is reliable.

VARICOSE VEINS.

Varicose Veins. By A. OCHSNER, B.A., M.D., D.Sc., F.A.C.S., and H. MAHORNER, B.A., M.D., M.S., F.A.C.S., with a foreword by R. MATAS; 1939. St. Louis: The C. V. Mosby Company; Australia: W. Ramsay (Surgical) Proprietary Limited. Super royal 8vo, pp. 147, with illustrations. Price: 18s. net.

THIS small monograph is attractively produced, being liberally illustrated and presented in an easily readable form. It contains all available modern facts relative to varicose veins. Excellent sections are devoted to the history, anatomy, pathology, physiology, ætiology and treatment. One is impressed with the deductions made by the authors from statistics relative to mortality, results and recurrences following the various methods of treatment. The mere presence of varicose veins should not, in these modern times, call for immediate injections of a sclerosing agent; each individual case should be studied before a decision is made on a rational line of treatment.

The methods of examination and diagnostic tests for disordered function are well described, and an attempt is made to evaluate the treatment by injection of sclerosing agents and by the various operative procedures. The selection of types suitable for injection treatment is described, together with the technique of this procedure. It is apparent to anyone reading this book that the treatment of varicose veins by the haphazard injection of a sclerosing agent is no longer justifiable. There is a tendency, whilst avoiding the radical methods of the past, to combine, in suitable cases, ligation and division with the injection treatment.

It is a pity that the authors have not devoted more space to the treatment of complications, such as varicose ulcer, the bugbear of the general practitioner; but, everything being considered, this little book is excellently presented and complete in all details, and is a very welcome addition to the already voluminous literature on the subject.

Proceedings of the Royal Australasian College of Surgeons.

NEW SOUTH WALES ANNUAL MEETING.

THE annual meeting for the State of New South Wales was held at Orange on Saturday, October 28, 1939. The following programme was presented at the Orange Base Hospital.

Lecturettes and Clinical Demonstrations, 2.30 p.m.

- C. B. Howse: "Some General Surgical Cases."
T. Hamilton: "Practical Points in the Management of Perforating Duodenal Ulcer."
C. S. Colvin: "Trachoma Treated with Sulphanilamide"; "A Case of Corneal Grafting."
H. O. Lethbridge: "Stop, Look and Listen."
R. E. Buckingham: "Cavernous Sinus Thrombosis"; "Muscle Grafting for Facial Paralysis."
F. O. Stokes: "Hernia in a Country Practice."
B. Moore: "A Case of Perforated Gastric Ulcer."

Address, 8.15 p.m.

An address was given by Fay Maclure, of Melbourne, entitled "Compound Fractures of the Lower Extremity". A general discussion followed.

TASMANIAN ANNUAL MEETING.

THE annual meeting for the State of Tasmania was held in Hobart on Friday and Saturday, November 17 and 18, 1939. The following programme was presented.

Friday, November 17, 1939.

At the Tasmanian Museum—

- 10.30 a.m.—Annual State meeting of Tasmanian Fellows.
11.15 a.m.—Address: "Role of Surgery in Therapeutics", Clifford Craig, of Launceston.
1 p.m.—Luncheon to Dr. D. H. E. Lines.
3 p.m.—Address: "Present Status of Surgical Education in America", Thomas Giblin, of Hobart.
4 p.m.—Address: "The Treatment of Common Septic Conditions", G. R. A. Syme, of Melbourne.
8.30 p.m.—Address: "Pelvic Appendicitis", Sir Hugh Devine, of Melbourne.
9.30 p.m.—Address: "Some Aspects of Prostatic Surgery", Balcombe Quick, of Melbourne.

Saturday, November 18, 1939.

At the Tasmanian Museum—

- 11 a.m.—Address: "Obstetric Manceuvres", E. Brettingham Moore, of Hobart.
11.30 a.m.—Address: "The Problem of Hæmatemesis", G. R. A. Syme, of Melbourne.
2.15 p.m.—Address: "A Method of Dealing with Chronic Osteomyelitis and Other Bone Conditions", Balcombe Quick, of Melbourne.
8.30 p.m.—Tasmanian Museum and Art Gallery. Reception given by Tasmanian Fellows.
9.30 p.m.—Popular lecture: "The Old Penal Stations of Van Diemen's Land", Wilfred Hudspeth, LL.B.

At the Royal Hobart Hospital—

- 3.45 p.m.—Tea at Royal Hobart Hospital, followed by clinical meeting, arranged by D. W. L. Parker, of Hobart.

VICTORIAN HALF-DAY MEETING.

A HALF-DAY meeting for the State of Victoria was held at Saint Vincent's Hospital, Melbourne, on Friday, November 17, 1939, at 2 p.m. The programme was as follows.

Theatre No. 1.

- 2 p.m.—Operation. R. F. O'Sullivan: "Vaginal Plastic."
3 p.m.—Operation. Leo Doyle: "Partial Gastrectomy", with local anæsthetic.

Theatre No. 2.

- 2 p.m.—Operation. F. P. Morgan: "Cerebral Tumour."

Theatre No. 3.

- 2 p.m.—Operation. Thomas King: "Recurring Dislocation of the Clavicle."
3 p.m.—Operation. C. Gordon Shaw: "Carcinoma of the Colon."

Theatre in the Basement.

- 2 p.m.—Operation. Henry Mortensen: "Prostatic Resection."
Demonstration. Henry Mortensen: Urological films.

THE GORDON CRAIG LIBRARY.

THE attention of Fellows is drawn to the following papers which have recently been fully translated from foreign literature:

- "Panosteomyelitis of the Femur; Spontaneous Fracture; Results of a Conservative Therapeutic Nine Months Later", by M. Ricard.
"Causes and Treatment of Pseudarthrosis of the Neck of the Femur", by P. Funck-Brentano.
"Active Internistic Therapy of Acute Pancreatitis", by Professor S. Katsch, from *Zeitschrift für klinische Medizin*, Volume cxxxv, 1939.
"A Case of Besnier-Boeck Disease or Benign Lympho-Granulomatosis of Schaumann with Ocular Manifestations", by H. Coppez and B. Dujardin, from *Archives d'ophtalmologie*, Volume ii, 1938.
"Observations and Treatment in So-Called Thrombosis of the Axillary Vein", by Wagner, from *Zentralblatt für Chirurgie*, Volume lxx, 1938.
"On the question of So-Called Thrombosis of the Vena Axillaris", by Hugo Puhl, from *Archiv für klinische Chirurgie*, Volume cxc, 1937.
"On the Size-Distinction of the Images of Both Eyes in Asymmetrical Convergence and its Significance in Binocular Vision", by Werner Herzau and K. N. Ogle, from *Graefes Archiv für Ophthalmologie*, Volume cxxxvii.

Once again the Council wishes to remind Fellows that the following services are available in the Gordon Craig Library:

1. Fellows may receive on loan any textbook, monograph, journal or reprint available at the College.
2. Fellows resident in the Commonwealth of Australia will not be permitted to retain a book for more than one month, and Fellows resident in the Dominion of New Zealand for more than two months. Books not returned at the expiration of this time will be charged to Fellows.
3. No Fellow will be allowed to borrow more than two books or two journals, or one book and one journal, at one time without special permission.
4. Translations from foreign journals received in the library will be supplied to Fellows free of charge.
5. Photostatic copies of articles and illustrations appearing in textbooks, monographs, medical and surgical journals received at the College will be supplied to Fellows free of charge.

6. References will be supplied to Fellows of the College who are writing papers. Information concerning articles published on any particular subject, or by any particular author, will be supplied. Should the journal required not be available in the College library, facilities are available whereby Fellows may be informed whether the journal they require is available in Australia and, if so, at what library.

Fellows are invited to avail themselves of these services.

Notices.

NEW DEVELOPMENTS IN SURGICAL EQUIPMENT.

THE attention of Fellows is drawn to pages xx and xxxi among the advertisements, which illustrate some recent developments in surgical equipment. The Editorial Committee is responsible for the selection of the equipment illustrated thereon. The publishers will be pleased, whenever possible, to supply the names and addresses of the manufacturers to anyone requiring such information.

Editorial Notices.

EDITORIAL communications should be addressed to the Chairman of the Editorial Committee, 57 Collins Street, Melbourne, or to any member of the Editorial Committee. It is understood that original articles forwarded for publication are offered to THE AUSTRALIAN AND NEW ZEALAND JOURNAL OF SURGERY solely, unless the contrary be stated.

Reprints can be supplied at cost price; the minimum number is fifty copies. Orders for reprints must be given when the proof is returned.

Exchange journals should be addressed to the Honorary Librarian, Royal Australasian College of Surgeons, Spring Street, Melbourne, C.1, Victoria, Australia.

Business communications and remittances should be addressed to Butterworth and Co. (Australia) Ltd., 8 O'Connell Street, Sydney.

COMMONWEALTH



OF AUSTRALIA

DEPARTMENT OF HEALTH

TETANUS ANTITOXIN

Globulins, refined and concentrated

The attention of the medical profession is directed to the high quality of Tetanus Antitoxin which is being issued by the Commonwealth Serum Laboratories.

The Laboratories issue only concentrated and purified Serum, which is of high potency and small volume.

During the preparation of the concentrated serum those fractions of the protein content of the immune antitoxic serum which are most disposed to induce serum sickness, are eliminated.

The concentrated serum contains in a very small bulk many thousands of antitoxin units. Before issue it is carefully tested for unitage and sterility by methods which have the approval of the best authorities.

The serum in its present form is a relatively stable product and is not disposed to precipitate or to produce serum sickness. It has been employed for routine use in the large Metropolitan Hospitals in Australia.

Tetanus Antitoxin Globulins, refined and concentrated, can be obtained in the following quantities:

1 ampoule containing 500 units (U.S.A.) =	1,000 International units	1/6
1 ampoule containing 1,000 units (U.S.A.) =	2,000 International units	3/-
1 ampoule containing 1,500 units (U.S.A.) =	3,000 International units	4/-
3 x 1,500 unit ampoules in one package	11/-
1 ampoule containing 5,000 units (U.S.A.) =	10,000 International units	11/6
1 ampoule containing 10,000 units (U.S.A.) =	20,000 International units	20/-

Supplies may be obtained from the COMMONWEALTH SERUM LABORATORIES, Royal Park, Victoria, and also from the following: Director-General of Health, Canberra; Chief Quarantine Officer (General), Anzac Square, Adelaide Street, Brisbane; Chief Quarantine Officer (General), Customs House, Circular Quay, Sydney, N.S.W.; Chief Quarantine Officer (General), C.M.L. Building, 41-47 King William Street, Adelaide, S.A.; Chief Quarantine Officer (General), G.P.O., Perth, W.A.; Chief Quarantine Officer (General), Commonwealth Health Laboratory, Launceston, Tasmania.

Supplies may also be obtained from The Director-General of Health, Wellington, N.Z.

Gas-Gangrene Antitoxin (Perfringens)

Globulins, refined and concentrated

1 ampoule containing 4,000 units	6/6 each
1 ampoule containing 10,000 units	15/- each

COMMONWEALTH SERUM LABORATORIES
ROYAL PARK—VICTORIA—AUSTRALIA



B-D
**SYRINGE
and
AMPOULE CASE**

(No. 2507, as illustrated.)

Contains syringe in spirit-proof case, assorted needles and ampoule space.

**Price (without ampoules),
45/-.**

**HÆMOGLOBIN
AND BLOOD SUGAR
COLORIMETER**

**A HIGH PRECISION INSTRUMENT,
SIMPLE AND SPEEDY IN WORKING**

In the hæmoglobin estimation the blood is added to N/10 hydrochloric acid, the colour intensity being then compared in the Colorimeter with a gauged colour scale. In the blood sugar estimation the blood is mixed with a 1.2% picric acid solution, shaken and filtered. Sodium hydroxide solution is added, and after five minutes' boiling on a water bath and immediate cooling the blood sugar value in mgm.% is read on the Colorimeter.

Full directions given for each process.

Price £8/10/- No. 2307.



Elliotts and Australian Drug Pty. Ltd., Sydney

A. M. BICKFORD & SONS LTD.	ADELAIDE AND BRISBANE
FELTON, GRIMWADE & BICKFORD LTD.	PERTH
FELTON, GRIMWADE & DUERDINS LTD.	MELBOURNE
TAYLORS, ELLIOTTS & AUSTRALIAN DRUG PTY. LTD.	BRISBANE, ROCKHAMPTON AND TOWNSVILLE

"SMITH" OPERATION TABLES SET A NEW HIGH STANDARD OF SURGICAL EXCELLENCE



QUALITY
that gives
CONFIDENCE
to the Surgeon

PRECISION
•
STRENGTH
•
STABILITY
•
100% AUSTRALIAN

MANUFACTURED
BY

R. L. SMITH & CO.

136 GRENFELL ST., ADELAIDE

Agents: K. G. LUKE LTD., Melbourne; RICHARD THOMSON LTD., Castlereagh Street, Sydney



Ether--Ideal Anæsthetic

WOOLWICH and ELLIOTT brands of Anæsthetic Ether and Ethyl Chloride (complying with all the tests of the B.P., 1932) are used extensively in hospitals throughout Australia.

FAMOUS BECAUSE THEY SATISFY

ANÆSTHETIST . . . prefers an anæsthetic that is simple and flexible in its administration . . . low cost . . . easily transported.

SURGEON . . . demands muscular relaxation and smooth anæsthesia.

PATIENT . . . assured safety during the entire anæsthesia and comfort in the induction and recovery stages.

Specify WOOLWICH and ELLIOTT brands when ordering supplies through your wholesale house or Government Stores Department.

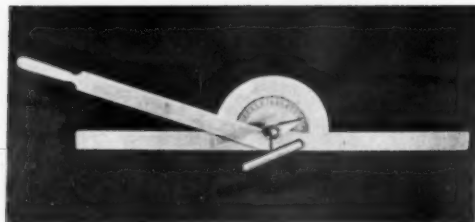
Made in Australia by

Woolwich-Elliott Chemical Co. Pty. Ltd.

SCOTTISH HOUSE, 17 BRIDGE STREET, SYDNEY

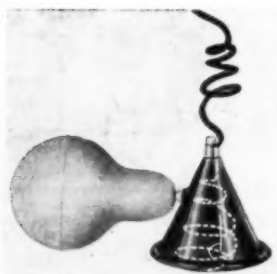


New Developments in Surgical Equipment.



A SERVICEABLE GONIOMETER WITH SUPINATION-PRONATION ATTACHMENT.

The apparatus has a wide application in the measurement of different joints, is light, inexpensive and has easily readable figures. Described by Herbert W. Virgin, Junior, M.D., Wisconsin, *The Journal of Bone and Joint Surgery*, Volume XXI, Number 1, January, 1939, page 221.



A NEW PRECORDIAL ELECTRODE.

(*The American Heart Journal*, Volume XVIII, Number 1, July, 1939, page 94.)

The apparatus consists of a cup made of plastic material through which an electrode of silver wire protrudes. Attached to the cup is a rubber bulb which creates suction sufficient to hold the electrode on the precordium, thus obviating the need of a nurse or the cooperation of the patient.



A NEW INSTRUMENT FOR PASSING THE PARHAM BAND.

(*The Journal of Bone and Joint Surgery*, Volume XXI, Number 4, October, 1939, page 1047.)

- A = Complete instrument with cap in place.
- B = Cap removed and Parham band inserted.
- C = Complete instrument with Parham band inserted, and (below) ring for removal of cap.

Described by Harry B. Macey, M.D., Rochester, Minnesota.

These instruments are selected by the Editorial Committee, and the Publishers will be glad, whenever possible, to give the names of the suppliers to any subscriber.



*** DAGENAN (M&B 693)**

now reduced in price!

Prices for Australia:

Containers of 25 x 0.50 gm. tabs.

~~12/-~~ **9/6**

Containers of 100 x 0.50 gm. tabs.

~~40/-~~ **33/-**

Containers of 25 x 0.125 gm. tabs.

~~6/3~~ **5/3**

Prices for New Zealand:

Containers of 25 x 0.50 gm. tabs.

~~11/2~~ **9/6**

Containers of 100 x 0.50 gm. tabs.

~~79/6~~ **37/-**

Containers of 25 x 0.125 gm. tabs.

~~6/2~~ **5/4**

The above prices are to the public and are subject to our usual discount.

In a little over a year, DAGENAN (M & B 693) has achieved world-wide renown in the treatment of pneumonia and other acute infective conditions. So consistent and strong has been the demand for this drug that we have been able to increase production and so reduce the price of DAGENAN considerably. Price reductions became operative at the beginning of October.

©TRADE MARK

Supplies may be obtained from F. C. Marrington, 5 Phillip St., Sydney, Australia, and J. L. Muir, Kelvin Chambers, Wellington, C.1, New Zealand, representatives of

**PHARMACEUTICAL SPECIALITIES
(MAY & BAKER) LTD., DAGENHAM, ENG.**

+ BANDEX

The new **ABSORBENT** Gauze Bandage
THAT FASTENS ITSELF

- ★ Absorbent
- ★ Antiseptic
- ★ Applied or removed in an instant
- ★ No tying or pinning
- ★ Fastens itself
- ★ Does NOT adhere to flesh, hair or clothing

Sizes: $\frac{3}{4}$ " x 3 yds.,
1" x $4\frac{1}{2}$ yds.,
 $1\frac{1}{2}$ " x 5 yds.

OBTAINABLE FROM ALL SUPPLIERS

BANDEX is an entirely new type of sterilized gauze bandage that requires no tying or pinning. It is applied in a few seconds and can safely be removed without fear of tearing the wound. It entirely eliminates ugly bandages and messy sticking plaster. Enquire immediately.



MEDICAL GYMNASTICS...

● **MEDICAL GYMNASIUM.**—The Medical Gymnasium has all the latest scientific appliances for treatment and re-education of muscles and stiff joints after periods of inactivity, including special machines for graduated exercise, Spinal Curvature, Stooped or Wry Neck, Flat Chest, Flat Feet and all postural and physical defects.

MEDICAL MASSAGE, ETC.—The Medical and Massage Department is equipped with all the latest appliances for treatment, including diathermy, radiant heat, hot air, galvanism and faradic current, ionization, hydro-electric, high frequency, vapour, electric light and Zotofoam baths.

In their own private massage rooms women patients may receive treatments.

All remedial treatment is carried out under medical supervision.

THE LANGRIDGE SCHOOL OF PHYSICAL CULTURE

● FOR MEN - - - - - 278 GEORGE STREET, SYDNEY. B 7719

● FOR WOMEN - - - - - 222 GEORGE STREET, SYDNEY. B 7719

PRODUCTS OF THE
GLAXO LABORATORIES

3 new preparations for use in everyday practice



1½ oz. tubes - 2/-

POWERFUL AND PROLONGED TISSUE ANTISEPTIC. Flavogel presents the powerful tissue antiseptic acriflavine in a water-soluble jelly base. This new base allows acriflavine to achieve intimate contact with the tissues in every part of the wound, and to exert maximum bactericidal effect, in marked contrast to emulsions and oily creams. Flavogel is soothing and does not allow the dressings to stick. Moreover, because Flavogel is not readily absorbed by tissue dressings, its action is prolonged, and it is economical in use. Presented in tubes, Flavogel is a compact yet highly effective component of the emergency first-aid outfit.



1½ oz. tubes - 2/6

A POTENT FUNGICIDE JELLY. Mersagel gives the physician decisive control over the growing prevalence of mycotic infections. This is news particularly welcome in the summer, when community bathing and athletics spread fungoid infections such as tinea cruris and tinea pedis. Mersagel consists of phenyl mercuric acetate—a powerful fungicide—at a concentration of 1 in 750 in a colourless water-soluble jelly base. Applied to the affected skin, Mersagel rapidly destroys the causative organisms. The jelly exercises a soothing influence and, by its exosmotic action, reduces swelling.



In ampoules, 6 × 2 cc. - 5/6

EFFECTIVE TREATMENT OF ALL VARICOSE VEINS. For the injection treatment of varicose veins, Ethamolin, the new G.L. sclerosing agent, offers specific advantages. Ethamolin is an aqueous solution of ethanolamine oleate (5 per cent.), with 2 per cent. benzyl alcohol. It is a definite chemical compound, precisely standardised, and is free of any impurity which might cause allergic reaction. Ethamolin is effective, reliable, and does not cause muscular cramp or pain. Even if the solution escapes into the perivenous tissues, no sloughing ensues. Injections up to 6 cc. may be given (in divided doses of 1-2 cc.) at each treatment.

These prices are subject to usual professional discount.

GLAXO LABORATORIES (AUSTRALIA) PTY. LTD., MELBOURNE AND SYDNEY



Following any abdominal incision, this model provides a comfortable uplift, enabling the muscles to regain their lost tone. It demonstrates the purpose of Berlei Supports in that it is designed with back-lacing for adjustment, soft surgical elastic at front, with the skirt coming well down to control hips and thighs.

Scientific Support for Post-Operative Cases

The dual purpose of Camp Patent Supports

It is well known to the surgeon that after abdominal operations a great deal is achieved if confidence in mind as well as health in body can be induced. "Camp-Berlei" Supporting Garments, classified as simple, wearable models, easily adjusted and comfortable, are found very acceptable to the patient. She not only appreciates the sustaining support she so much needs, but has also a neat, well-fitting garment which can be worn regularly as an every-day girdle.

The models for use as Post-Operative and Convalescing Foundations are designed for wear after operations such as Appendicitis, Gall Bladder, Hernia at any point, or any condition involving the abdominal viscera. When prescribed they may be fitted by one of the trained sisters and surgical fitters at leading stores in the city and larger towns.



BERLEI LIMITED

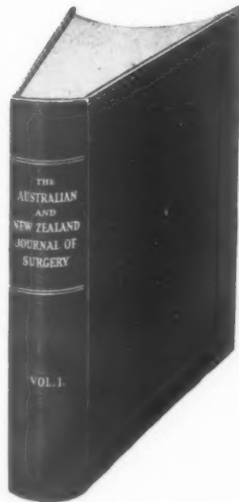
39-47 REGENT STREET, SYDNEY

MELBOURNE • BRISBANE • ADELAIDE • AUCKLAND • LONDON

SPICERS AND DETMOLD LTD.

Official Bookbinders to Butterworth & Co. (Australia) Ltd.

HAVE YOUR COMPLETE SETS OF THE AUSTRALIAN
AND NEW ZEALAND JOURNAL OF SURGERY BOUND
IN STRONG AND HANDSOME BINDINGS WITH TITLE
IN GOLD ON BACK.



Half Calf .. 13/9

Full Leather
Cloth ... 8/6

Buckram .. 8/6

Cloth 8/-

NO MORE MISSING PARTS

“Bound” to Last for Many Years!

All communications in connection with binding should be
addressed to BUTTERWORTH & CO. (AUSTRALIA) LTD.

(Incorporated in England)

It is the most liberal



of INSURANCE Policies

The comprehensive policy that provides the greatest benefits is the one issued by your own company—the B.M.I.

In addition to the usual protection against theft, fire and collision risks you are entitled to—

- Compensation in the event of death or total disablement.
- Medical and Surgical Expenses.
- Compensation during repairs to car.
- Law costs.
- Cover during sea or rail transit.
- Participation in Profits, etc.

Remember also that the Company makes cash payment in aid of many works in which the B.M.A. is interested and assists in the maintenance of the Library of the Medical Society of Victoria.

INSURE with the B.M.I.

(The Company is under the aegis of the B.M.A. and the Medical Society of Victoria.)

DIRECTORATE OF THE B.M.I.
 Dr. C. H. Mollison
 (Chairman)
 Dr. R. H. Fetherston
 Dr. J. Newman Morris
 Dr. F. Kingsley Norris
 Mr. T. E. V. Hurley

All classes of General Insurance Business handled (except life).
BURGLARY
FIRE
WORKERS' MARINE
PERSONAL ACCIDENT and SICKNESS, etc.

THE BRITISH MEDICAL INSURANCE CO. OF VICTORIA LTD.

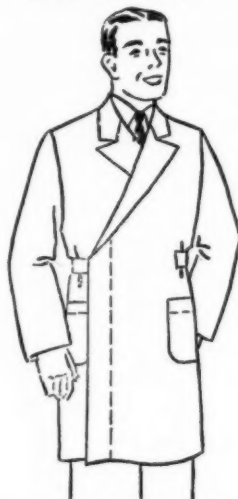
389-395 Little Flinders Street, Melbourne, C.I.
 'Phone: M 1871 (9 lines).

Uniform Specialists

PTY. LTD.

64a Druiett Street, Sydney

'Phones MA 5578, 7971



No. 800/4.—MEN'S HOOVER COATS WITH COLLAR.

Sanforised CESARINE	15/6
Lightweight British Drill	17/6
Heavyweight British Drill	21/-

Send for CATALOGUE showing STYLES!



No. 244.—LADIES' CESARINE UNIFORM with high Peter Pan or low Puritan collar and 6 gore swing skirt.

Short Sleeves	22/6
Long Sleeves	24/-

Further particulars on application!

INCREASINGLY Valuable in ANESTHESIA

INCREASING KNOWLEDGE of the advantages of cyclopropane for general inhalation anesthesia has rapidly extended the use of this agent. It has proved to be particularly valuable in thoracic, thyroid, and gynecologic surgery.

Induction of anesthesia with cyclopropane is pleasant and rapid. Breathing is quiet. Circulation is not depressed. Relaxation is comparable to that obtained with ether. Recovery is rapid. Post-operative morbidity compares favourably with other anesthetic agents.

Squibb Cyclopropane is an exceptionally pure gas. Anesthetists throughout the country have generally accepted it as a dependable anesthetic agent.

Squibb Cyclopropane is supplied in 2-, 6-, and 25-gallon Amplons.* Because of their light weight, the 2- and 6-gallon Amplons are especially suitable for portable machines. Squibb Cyclopropane can also be obtained in standard cylinders of 30, 75 and 200 gallons.



Note.—Cyclopropane is a highly potent gas and should be used only by anesthetists who are familiar with the technique of its administration.

For information and booklet on Cyclopropane address

S. Hoffnung & Co. Ltd.

153-157 Clarence Street,

Sydney, Australia

E. R. SQUIBB & SONS

Manufacturing Chemists to the Medical Profession
since 1858.

* Amplon is a trade mark of E. R. Squibb & Sons.

PRINTERS - - - and STATIONERS

who can be confidently recommended

. . . From actual experience the Publishers can recommend to subscribers to the Journal the firms whose advertisements appear below.

Professional Stationery

and all Classes of
Printed Matter at shortest notice



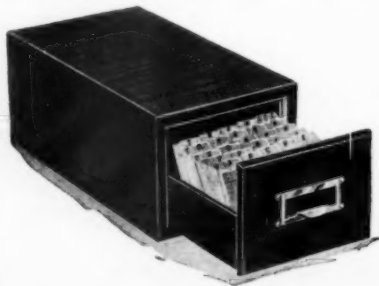
Australasian Medical Publishing Company Limited
The Printing House, Seamer Street, Glebe, Sydney

MEDICAL practitioners and other professional people who require printing of any nature should make application to the Manager for quotations, or 'phone MW 2651-2 and a representative will call on you.

HOGBIN COKER PTY. LTD.

*[PRINTERS Specialising in the production
of Publications requiring care
and accuracy, combined with first-class workmanship]*

331 KENT STREET, SYDNEY Telephone BW 6000



Medical Ledger Equipment

On the Card System

- 1 Drawer 6 x 4 Oak Card Cabinet.
- 500 Combined Record of Visits and Ledger Cards.
- 3 A to Z Alphabets.
- 3 Main Guides.
- Open, Completed but not paid,
Finished.

W. E. SMITH LTD.
Systems Specialists
310 GEORGE ST., SYDNEY

Price Complete,
35/-
Carriage Forward.

OFFICE SUPPLIES !

FOR TYPEWRITER—Bank, Bond and Follower Papers.
"Victory" Ribbons.
"Goodwear" Carbons.

YOU CAN DO BETTER AT EMPIRE !

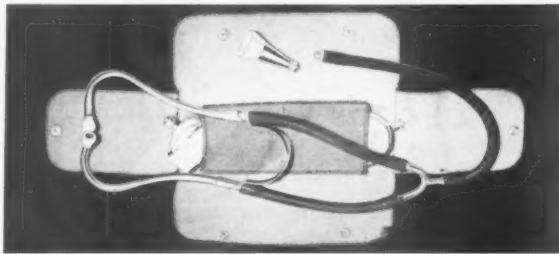
FOR DUPLICATOR—"Copyright" Absorbent Papers.
Stencils and Inks.

EMPIRE TYPEWRITER SUPPLIES CO.

MALCOLM LANE, SYDNEY. 'Phone BW 2375—5 lines.



B-D TRIPLE CHANGE STETHOSCOPE



Instead of procuring three separate stethoscopes, it is now possible to obtain all three by buying only one B-D Triple Change Stethoscope. Each of the above-mentioned styles of chest pieces is equipped with a Luer-Lok connection. This permits instant attachment of the chest piece by a half-turn.

Elliott's and Australian Drug Pty. Limited, 33 Bligh Street, Sydney.
Felton, Grimwade and Duerdins Ltd., 21 Alfred Place, Melbourne.
T. and E. Surgical Co., 152 Charlotte Street, Brisbane.
A. M. Bickford and Sons Ltd., 42-46 Currie Street, Adelaide.
Felton, Grimwade and Bickford Ltd., 297 Murray Street, Perth.

The Series of **NOTABLE BRITISH TRIALS**

PUBLISHED SINCE 1905

Each volume lays the entire case before the reader in precisely the same manner as it was laid out before the Judge and Jury.

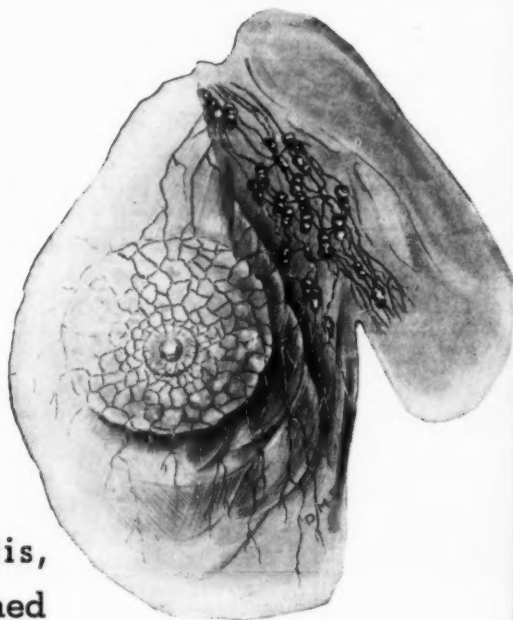
OVER FORTY TRIALS TO SELECT FROM
AT 9/6 EACH — QUOTATIONS FOR SETS
AND FULL PARTICULARS ON APPLICATION

"A 'Notable British Trial', it may be explained, is neither a camouflaged 'shocker' nor a legal textbook; sensation and human interest abound, certainly, and the book's value to the lawyer, historian and medical man is beyond dispute."

BUTTERWORTH & CO. (AUST.) LTD.

(Incorporated in England)

6-8 O'CONNELL STREET, SYDNEY, NEW SOUTH WALES
AND AT WELLINGTON, AUCKLAND, AND MELBOURNE



IN Mastitis,
in threatened
Abscess or in other acute Inflammatory
Processes of the Breast,

Antiphlogistine

finds one of its most satisfactory uses.

It promotes resolution,
it soothes, supports and
facilitates healing.

Sample and literature on request

THE DENVER CHEMICAL MFG. CO.
163 VARICK STREET, NEW YORK CITY

BOOKS FOR THE SURGEON

THREE SUPERLATIVE PRODUCTIONS

NEW BOOK

50s. NET (Postage 9d.)

JUST PUBLISHED

Fractures and other Bone and Joint Injuries

By R. WATSON-JONES, B.Sc., M.Ch.Orth., F.R.C.S.

OF LIVERPOOL

Royal Medium 8vo. 736 pages. Illustrated with over 1,040 Photographs, X-rays and Diagrams, a large number of which are in colour. (November, 1939.)

1 COMPLETE ILLUSTRATED 8 PAGE PROSPECTUS FREE ON APPLICATION

NEW BOOK

20s. NET

JUST PUBLISHED

Illustrations of Surgical Treatment Instruments and Appliances

By ERIC L. FARQUHARSON, M.D., F.R.C.S.E.

OF EDINBURGH

With a Foreword by SIR JOHN FRASER, M.C., M.D., Ch.M., F.R.C.S.E.
Royal 8vo. 352 pp. Profusely illustrated with over 300 photographs and diagrams and also 57 full-page plates, showing some 400 instruments and appliances. (October, 1939.)

NEW BOOK

27s. 6d. NET

JUST PUBLISHED

Pathological Histology

By ROBERTSON F. OGILVIE, M.D., F.R.C.P.E.

With a Foreword by PROFESSOR A. MURRAY DRENNAN, M.D., F.R.C.P.E., F.R.S.E.
Demy 8vo, with 342 pages of text-matter, illustrated with 220 photomicrographs in colour.

1 The first text

and specialist.

NEW BOOK

TREATMENT

(Medical
Edited by T. ROWE
(Lond.), With
416 pp., with 99
and Diagrams
6d.

1 Specially designed
and surgeon who
should also be of v
and post-graduate s

NEW BOOK

THE ESSENT

SU

Edited by R. M. HALL
F.R.C.S., and A.
F.R.C.S., and A.
Royal 8vo. 114s
net; postage 1s.

1 "Basic principles
text is easy to read
diagrams and diag
as a thoroughly
surgery this book s
to all students."—G

Illustrations of Surgical Treatment
Fractures and other Bone and Joint Injuries

Iowa State Medical Library HISTORICAL BUILDING DES MOINES, IOWA

We hope you obtain pleasure and profit from the use of the Iowa State Medical Library. You can increase its usefulness by returning your books promptly. We are pleased to be of service to you.

Borrower. Adults are entitled to draw books by filling out an application card.

Number of Volumes. Two new books, or two new consecutive Journals cannot be taken by one person. Students may borrow 3 volumes at a time, which are not renewable.

Time Kept. The period of loan is two weeks; older books may be once renewed. New books and Journals are not renewable.

Forfeiture of Privilege. Loss of books or journals without paying for same, defacing or mutilating material, three requests for postage without results, three requests for return of material without results, or necessity of asking Attorney General's aid to have material returned, bars from future loans.

Transients and those at hotels may borrow books by depositing the cost of the book, or \$5.00, which is returned when the book is returned.

SECTIONS VI & VII

F REGIONAL
MY

Anatomy Depart-
ment. Sections
Each Section in
The complete set
et, but purchasers
is at one time can
net; postage 9d.

rather) volume, 50s.

NEW BOOK

BANDAGING
AID

256 pp., 290 illus-
6d.
(November, 1939.)

Bandaging clearly
photographs and

E.

E.

"The Doctor's Dilemma"

**Life, Health, Vigour and Knowledge in combination
form the Capital of the Professional Man.**

THIS COMPOSITE CAPITAL TENDS TO DIMINISH.

While health and vigour remain the toll of the years may be compensated by gain in Knowledge; but inevitably there comes a time when the forces of decrement prevail.

Through untimely death or disability the human capital may suddenly shrink to nothing.

The effect of the gradual or sudden shrinkage of this Composite Capital of a Professional Man

Can be Avoided

by means of

The Improved Income Policy

of

The National Mutual Life Association

OF AUSTRALASIA LIMITED

(Established 1869)

**Head Office: Corner Collins and Queen Streets, Melbourne.
Branches and Agencies throughout Australia and New Zealand.**

BOARD OF DIRECTORS:

Sir Harold D. Luxton, K.B., Chairman.

Major-General Sir Brudenell White, K.C.B., K.C.M.G., K.C.V.O., D.S.O., Vice-Chairman.

Herbert Brooks, Esq., B.C.E., Melb. Univ.

Hon. Sir William H. Irvine, G.C.M.G., LL.D.

V. Y. Kimpton, Esq.

Sir Alan Newton, K.B., M.S.Melb., F.R.C.S.

Brig. E. F. Herring, D.S.O., M.C., K.C.

